

The Thomas Jefferson Program in Public Policy

An Analysis of the Economic Impact of The Rita Welsh Adult Literacy Program on the Williamsburg Community

Andrew G. English and Chenggeng Bi
December 30, 2009

Table of Contents

Executive Summary	3
I. Introduction	4
<i>A. Background</i>	5
<i>B. Rita Welsh Adult Literacy Program Learner Information</i>	8
<i>C. Rita Welsh Adult Literacy Program Model and Technique</i>	12
II. Analysis of Rita Welsh Adult Literacy Program Administrative Data	17
III. Literacy Impact Research	23
<i>A. Definition of Literacy</i>	23
<i>B. Measurement of Literacy</i>	24
<i>C. Literacy and Employment</i>	26
<i>D. Literacy, Poverty and Welfare</i>	27
<i>E. Literacy and Earnings</i>	29
<i>F. Impact of RWALP on ESOL Learners' Earnings</i>	32
<i>G. Literacy and Health Status</i>	35
<i>H. Estimated Lost Costs of Health Care due to Low Literacy in Williamsburg Community</i> ...	38
<i>I. Literacy and Crime</i>	39
<i>J. Estimated Costs of Incarcerations due to Low Literacy in Williamsburg Community</i>	41
IV. Training Techniques for the Rita Welsh Adult Literacy Programs	42
<i>A. Tutor-Learner Interaction</i>	42
<i>B. Community Appropriate Techniques</i>	50
<i>C. ESOL Specific Techniques</i>	53
V. Conclusion	57
References	63

Executive Summary

The Rita Welsh Adult Literacy Program (RWALP) has served the Williamsburg community since 1975. Through its long standing partnership with the College of William & Mary, the program has established Adult Basic Education (ABE) and English for Speakers of Other Languages (ESOL) programs that allow adult learners to gain the skills required for self-sufficiency, better health, and more meaningful participation in society.

Key findings of this report include:

- Based on an analysis of the 2003 National Assessment of Adult Literacy (NAAL) data, literacy has an important impact on employment, poverty, weekly wages, welfare dependence, health status and crime.
- Based on the 1992 National Adult Literacy Survey (NALS), for every one point of improvement in a learner's quantitative literacy score, weekly wages improve approximately 0.4%. (based on 500 point scale of quantitative literacy)
- On average, the RWALP sees a 44.6 point improvement between the pre- and post-assessment test scores for ESOL learners based on a testing instrument that is similar to that used in NALS.
- We estimate that the RWALP improves the weekly earnings of ESOL learners by 17.8%. (44.6 points x 0.4% improvement in weekly wages)
- The cumulative cost to the U.S. economy of poor health literacy is estimated at between \$106 billion to \$236 billion per year based on a study from the University of Connecticut.
- Based on the 2003 NAAL, there are approximately 3,430 (range from 1,519 to 6,092) people with low literacy in Williamsburg/James City County.
- The extra health care costs for a patient due to low health literacy is \$10,005 per year according to the Journal of the American Medical Association.
- Williamsburg/James City County spends approximately \$34,317,150 (range from \$15,197,595 to \$60,950,460) in additional health-related expenses per year due to low literacy.
- There is national evidence that improved literacy could reduce re-incarceration rates by 10%.
- The additional cost of re-incarceration due to low literacy in Williamsburg/James City County is approximately \$2,294 per inmate, per year.
- Williamsburg/James City County spends approximately \$38,559 (range from \$17,076 to \$68,484) more in the cost of re-incarceration per year due to low literacy.

I. **Introduction**

This report commissioned by the Rita Welsh Adult Literacy Program (RWALP) provides an independent, impartial analysis of the RWALP and its effect on the Williamsburg community and economy. The report uses national, state, local, and program data for the analysis. The report also describes and analyzes the training methods used by the Rita Welsh Adult Literacy Program and includes comparisons with the methods used by selected other programs that serve similar communities.

We examine what is known in the field about the relationship and impact of improved adult literacy levels on factors such as: employment, poverty, earnings, health status, and crime. Using the data from the 2003 National Assessment of Adult Literacy (NAAL), we explore the relationship between measures of adult literacy and economic, health, and crime outcomes. We also use the 1992 National Adult Literacy Survey (NALS) to conduct multivariate analyses of these key relationships.

Program data from the RWALP is also analyzed to allow us to have a better understanding of the program enrollment patterns and measures of program outcomes. The enrollment time trends of English to Speakers of Other Languages (ESOL) and Adult Basic Education (ABE) learners provide indicators of the growth and development of the RWALP. In addition, we compare the pre- and post-assessment learner scores to measure the extent of improvement in measured literacy as a result of being a learner in the RWALP. It should be pointed out that this measured improvement in scores is an imperfect measure of program impact, since it is not based on a randomized field experimental approach with an appropriate control group. Therefore, these estimates are subject to self-selection and other biases. Nevertheless, the calculated changes are consistent with there being positive program impact

from literacy training carried out at the RWALP. We then provide estimates of the likely impact of this literacy training on learners' earnings, health status, and crime propensities. This is based on national survey data adapted to the Williamsburg community.

This report also reviews methods and techniques used by selected other literacy programs. These are discussed to compare practices with methods used to train ESOL and ABE learners at the RWALP and identify any lessons learned.

A. Background

The Rita Welsh Adult Literacy Program presents itself, in its mission statement, in the following manner:

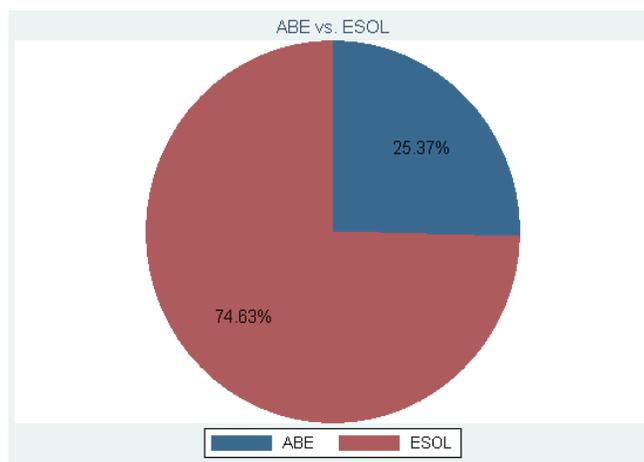
The Rita Welsh Adult Literacy Program builds better lives by teaching adults the literacy skills required for self-sufficiency, better health, and meaningful participation in society. How does RWALP do this? By providing customized instruction in reading, writing, and math for native-born adults, and English for speakers of other languages for non-native-born adults. Instruction is available free of charge to all adults who live or work in the Greater Williamsburg Area.

The inception of the program in 1975 occurred to combat a problem on the campus of the College of William & Mary. Namely, it was discovered that dozens of employees of William & Mary could not read or write. In order to teach these employees, members of the faculty and the administration started the Adult Skills Program. The Adult Skills Program was later renamed the Rita Welsh Adult Literacy Program after its first director, a graduate student in the School of Education who held the post until her death in 1981, at which time the board of directors renamed the program in her honor.

In 1979, the program became a United Way agency and opened its doors to the community. The program is currently located on the campus of William & Mary in Bryan Hall. In 2010, the program will relocate to the new School of Education building. In its new space, the administrators of the program believe that the program will be able to serve more learners per year in an environment that has been specially designed for adult learning.

The Rita Welsh Adult Literacy Program is an independent 501(c) (3) non-profit agency that receives most of its funding from grants and donations. The program is the only one in the Greater Williamsburg Area that provides individualized, one-on-one tutoring for ABE and ESOL learners in reading, writing, and math. The program also provides support to adults who wish to take the General Educational Development (GED) certificate examination and the External Diploma Program (EDP), an alternative to the GED. Based on the RWALP data from academic year 2005 to 2008, approximately 25% of the program’s learners are ABE, and 75% are ESOL learners.

Figure 1.1: Program Composition, Academic Years 2005-2008



Source: The RWALP

During the 2009 academic year¹ RWALP is serving more than 350 learners from the Williamsburg community. The current program employs seven people and has numerous volunteers that work in the office and as tutors. The program receives funding from numerous sources. In 2007 and 2008, the Rita Welsh Adult Literacy Program’s overall budget was \$226,807. Of that, 23% came from the United Way, 32% came from corporations, foundations and religious groups, 21% came from private donations, 13% came from state and local government, and 11% came from investments, special events, and other sources.

Table 1.1: Budget Sources of the RWALP in 2007 and 2008

Budget Sources	Amount (Percentage)
The United Way	\$52,166 (23%)
corporations, foundations and religious groups	\$72,578 (32%)
private donations	\$47,629 (21%)
state and local government	\$29,485 (13%)
investments, special events, and other sources	\$24,949 (11%)
Total	\$226,807 (100%)

Source: The RWALP

The RWALP provides its learners with tutors who are mostly students from the College of William & Mary or retired residents of Williamsburg. In 2009, of the 132 tutors the program has, 20% were students from the College of William & Mary and 80% were residents of the Greater Williamsburg Area. These volunteer tutors provide instruction at no charge to all ABE learners and to the ESOL learners who score below a seven on their assessment test. The vast majority of the work done by the program is focused on ABE learners and the ESOL learners

¹ For the purposes of this study an academic year is from June 30 to July 1 of the next year. I.e. academic 2005 designates the period from June 30, 2005 to July 1, 2006.

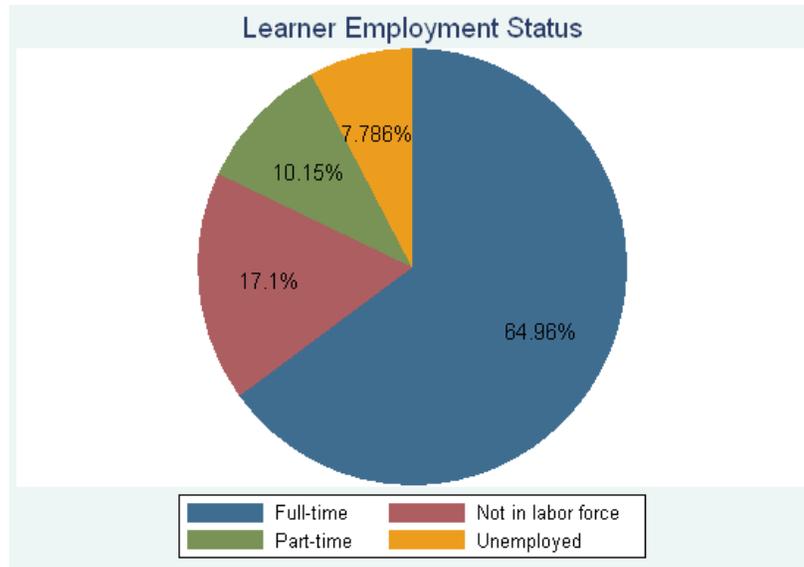
who score below a seven on their assessment test. As such, this report will focus on the work done with these learners. Those ESOL learners scoring higher than a seven may enroll in a program consisting of classes taught by trained professionals for a fee of \$100. These Conversation Classes include 15 hours of instruction and the class is conducted on site. This \$100 charge does not apply to other offsite classes, offered at businesses and community organizations.

The program also provides area employers English language classes at their worksite for non-English-speaking employees. In accordance with the needs of the learners, many of the tutoring techniques revolve around the type of work the learner does. This allows the learners to acquire skills they will use in their day-to-day jobs.

B. The RWALP Learner Information

It is useful to examine some basic information about learners enrolled in RWALP, such as their employment status, how they discovered the program, and why they exited the program. Figure 1.2 shows the employment status of learners when they enter the program. 65% of learners work full-time and 10% are part-time employed. Unemployed learners represent around 8% of the total learner population.

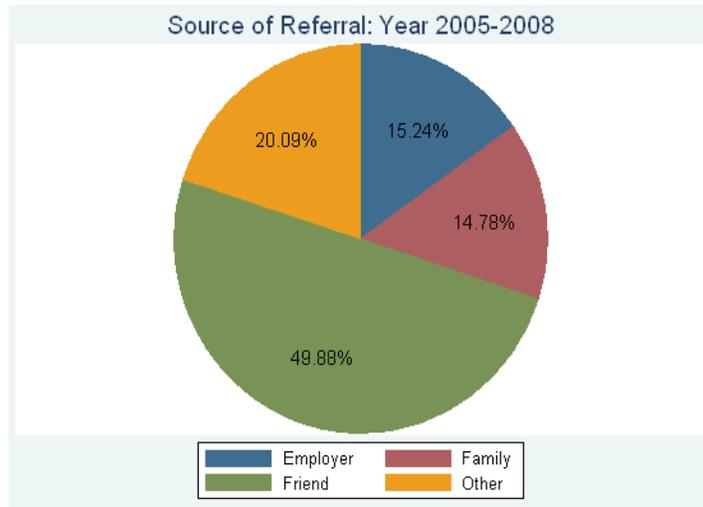
Figure 1.2: RWALP Learners Employment Status, Over Academic Years 2005-2008



Source: The RWALP

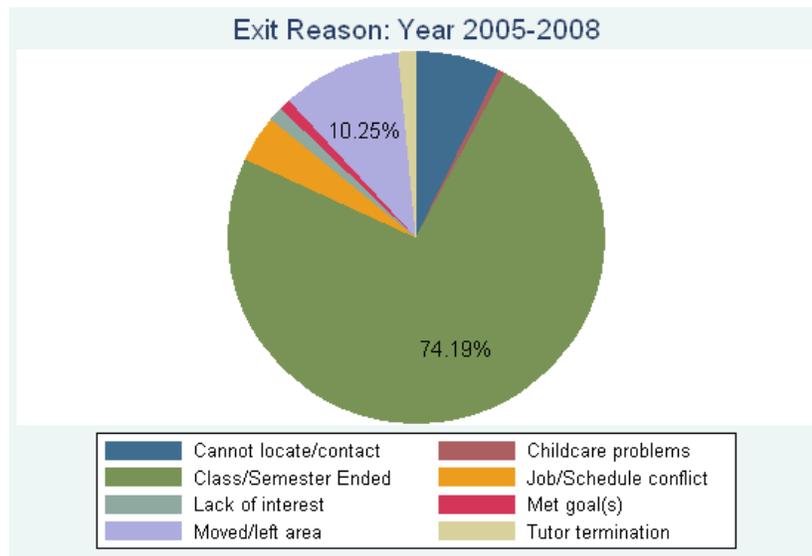
Most RWALP learners found out about the program as a referral by their friends and families. It appears that ESOL learners often get information about the RWALP from friends who attended the program in the past. For ABE learners, the primary way they find out about the RWALP is from their families. Primary motivators for ABE learners going to the RWALP include obtaining employment or better employment, earning a GED or EDP, or helping children with homework. The primary reasons most learners leave the program include: the semester (or class) ended, they moved out of this area, or they achieved their goal. It is notable that there are relatively few students who dropped out of the program due to dissatisfaction with the program.

Figure 1.3: Source of Referral



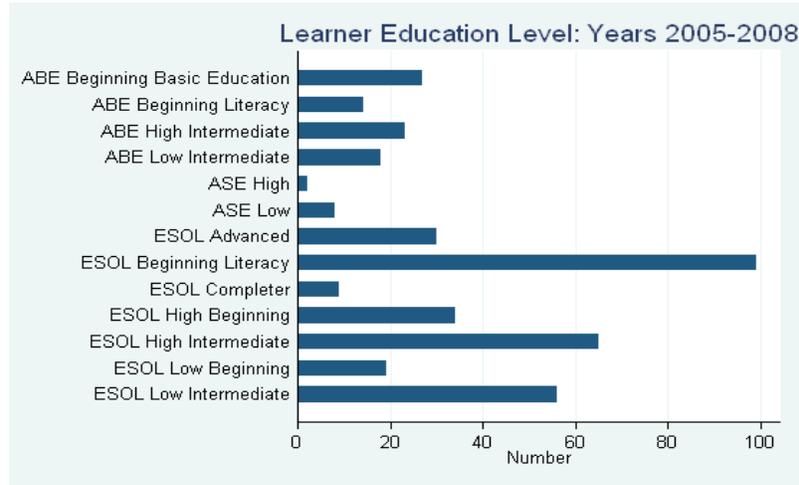
Source: The RWALP

Figure 1.4: Exit Reasons for the RWALP learners



Source: The RWALP

Figure 1.5: Learner Education Level²



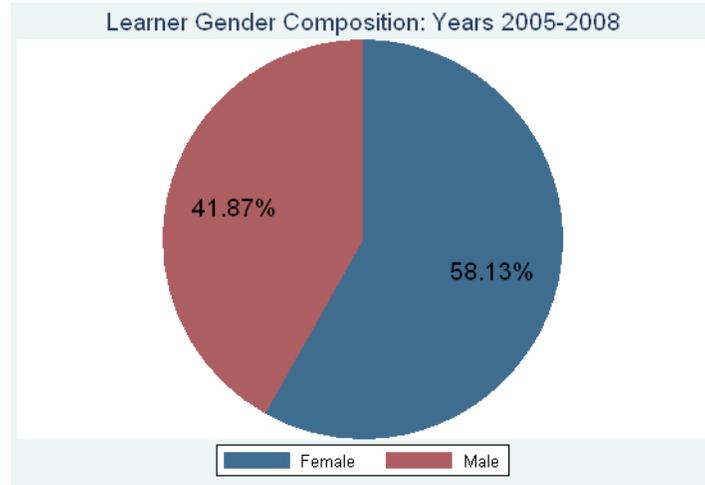
Source: The RWALP

ESOL learners represent 67% of the total learners served by the RWALP, and most are Hispanic or Asian. 61.7% of ESOL learners begin instruction at the beginning or low intermediate literacy levels. In the ABE program, 43.5% of learners begin instruction at the beginning or low intermediate literacy levels. (Figure 1.5)

Figure 1.6 illustrates that there are more female learners (58%) than males (42%) in the mixed ABE and ESOL programs during the academic years 2005 to 2008. Figure 1.7 shows that Latinos represent the largest ethnic group at nearly 46% of all ABE and ESOL learners from academic year 2005 to 2008. Whites and Asians make up around 20% of all ABE and ESOL learners, with Black/African Americans having the lowest proportion (15%).

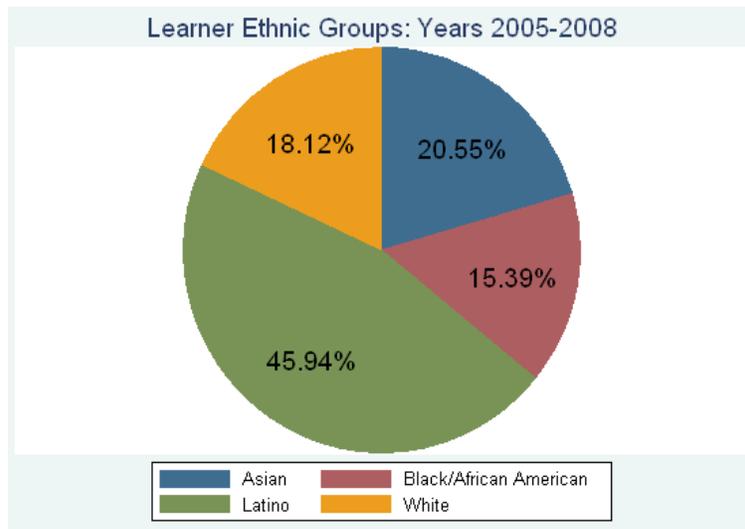
² In this graph, ASE means Adult Secondary Education.

Figure 1.6: Learner Gender Composition



Source: The RWALP

Figure 1.7: Learner Ethnic Composition



Source: The RWALP

C. Rita Welsh Adult Literacy Program Model and Technique

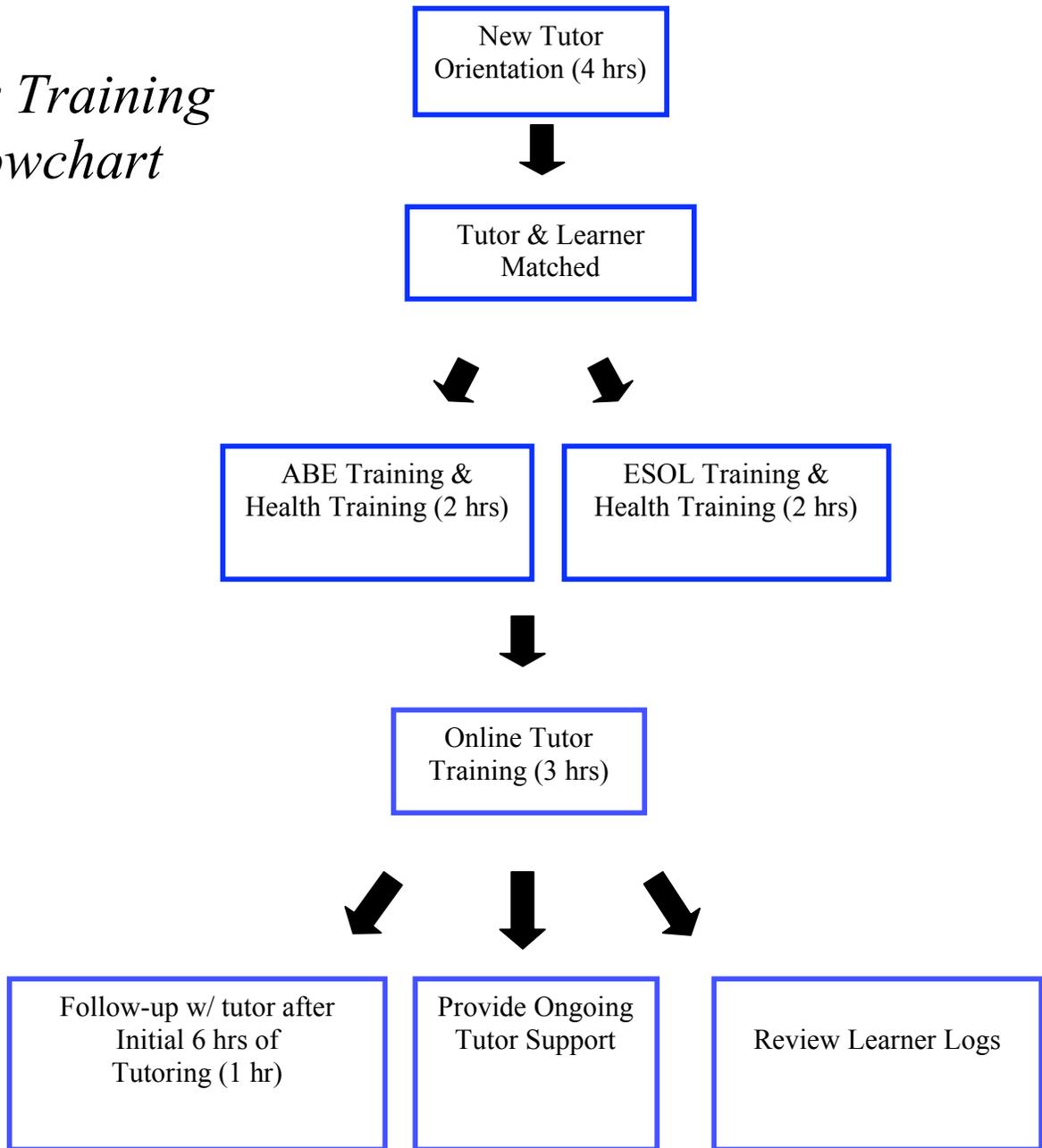
The Rita Welsh Adult Literacy Program provides one-on-one tutoring in reading, writing, and math, as well as English for Speakers of Other Languages. There is an annual \$20 intake fee; this fee can be waived based on need. The fee was instituted not as a means of generating

revenue, but primarily as an additional motivation to increase learner retention. The rationale for the fee is that the learners have more of an incentive to return given their financial commitment of \$20.

After the initial intake session and assessment test, the learners are paired with a tutor, mainly based on the times that both the learner and tutor are available. As of fall 2009, each tutor attends a four-hour New Tutor Orientation Training before they are paired with a learner. After the pairing, the tutor is required to attend an additional two-hour training session that focuses on ABE Training or ESOL Training, depending on the type of learner assigned to the tutor. After the completion of this training, tutors are also required to do an additional three-hour online training which focuses on adult learners. After approximately six hours of tutoring with the learner, there is a one-hour Follow-Up Training Session with the RWALP staff. Ultimately, each tutor receives a total of ten hours of training in their first semester as a tutor. Additionally, the program provides tutor support throughout the tutoring process, and reviews the tutor notes recorded in the individual learner logs to see how they can aid the tutors in the learning process. Currently, the program breakdown for its training sessions is as follows:

Figure 1.8:

Tutor Training Flowchart



In the tutor training sessions, each tutor is asked to commit to two to three hours per week, which includes tutoring, travel, and prep time. Each tutor is taught to keep records of the number of instructional, travel, and prep hours they provide.

Both ABE and ESOL learners work with their tutors to set SMART Goals. According to RWALP these SMART Goals should be specific, measurable, attainable, relevant, and timely. Learners and tutors discuss specific long-term goals and set specific short-term goals that will ultimately aid them in attaining their long-term goals. All of these short-term goals should be measurable and attainable. The tutors discuss the learner's current level of proficiency and what level of proficiency the learner wants to achieve. The program intends for tutoring sessions to focus on skills that the learners can use in their day-to-day lives. This means that each tutoring session is focused on instruction that is relevant to the learner. Tutors are also instructed to identify any barriers that might be standing in the learner's way of achieving their goals. Barriers to learning might include transportation problems, lack of childcare, work conflicts, and low self-esteem. The program also fosters learning in health literacy by advising their tutors to incorporate health-related lesson plans into their tutoring.

The program has found that it is important to show progress to the learners. In setting SMART Goals, the program teaches its tutors to set long- and short-term goals based on the desires of the learner. For example, the learner's long-term goal may be to read the newspaper or help his or her children with schoolwork. The program instructs its tutors to start out by setting small attainable first step goals, such as understanding the box scores on the sports page in the newspaper or reading and understanding their child's report card. This process is an attempt to

show the learners their incremental progress toward their long-term goal of reading the paper or helping their children with schoolwork.

The tutors are responsible for picking level appropriate training materials that fit the learners' goals. Since the program incorporates computer technology in its instruction, tutors are given a basic overview both on ABE and on ESOL software programs during their training orientation and are encouraged to come back and learn more about the programs available at the RWALP. The different programs available to tutors and learners include Rosetta Stone, the Interactive Oxford Picture Dictionary, MHC Interactive Pre-GED, Real Achievement, and Ultimate Phonics Reading Program. Each one of these programs is designed to assist the learning process using methods such as mental imagery, image/word linkage, and testing.

The physical structure of the RWALP intends to maximize retention rates and learner outcomes by efficient and effective use of its resources and its training ideology. Other adult literacy programs throughout the country have similar goals and resources. This report analyzes how other programs make use of their resources and compares those findings to what is done at the RWALP. This comparison can provide valuable insight into current trends in adult literacy programs as well as effective techniques used by other programs. From this, we can see if and where improvements can be made by the RWALP.

II. Analysis of the RWALP Administrative Data

The Rita Welsh Adult Literacy Program has kept learner records since 1981. The data collection is not complete for the 1980s, but it becomes more reliable beginning in 2000. An analysis of the learner records reveals trends and variations over time. The ESOL and ABE programs have distinctive patterns, as illustrated in the learner profiles above, and as such are reported separately here.

The available data are most complete for the time frame of 2005-2008, a period of three years of data since the program data are based on academic calendars. Tables 2.1-2.4 show information regarding ABE and ESOL learners in this three-year timeframe. Table 2.1 presents information regarding ethnicity for both the ESOL and ABE programs. The ethnic group with the highest percentage for ABE is Black/African-American (55%), followed by Whites (26%) and Latinos (14%). Only 5.3% of ABE learners are of an Asian ethnicity. The ethnic composition for ESOL learners, on the other hand, has a much different pattern. For ESOL, the largest learner population is Latino (57%), followed by Asian (26%) and Whites (16%). Within this group, Black/African-Americans only account for 2%. Clearly, the ethnic compositions of the two types of learners are markedly different.

Table 2.1: ABE and ESOL by Ethnicity, Academic Years 2005-2008

Ethnicity	ABE	ESOL
Asian	18 (5.3%)	253 (25.8%)
Black/African American	187 (55.2%)	16 (1.6%)
Latino	46 (13.6%)	560 (57.1%)
White	88 (25.9%)	151 (15.5%)
Total	339 (100%)	980 (100%)

Source: The RWALP

Regarding gender composition, women comprise the majority of learners in both ABE and ESOL programs. (ABE=60%; ESOL=57%) See Table 2.2.

Table 2.2: ABE and ESOL by Gender, Academic Years 2005-2008

Gender	ABE	ESOL
Female	205 (60.3%)	574 (57.4%)
Male	135 (39.7%)	426 (42.6%)
Total	340 (100%)	1000 (100%)

Source: The RWALP

Table 2.3 presents the educational levels of learners. The most notable pattern is that 64% of ABE learners and 35% of ESOL learners do not have a high school or GED diploma. ESOL learners have higher levels of education than ABE learners. An anomaly in these data is the ABE learners who partake in tutoring that already have an undergraduate college degree. A possible explanation for this fact is that the learners desire assistance in quantitative literacy as opposed to prose or document literacy.³

Table 2.3: ABE and ESOL by Education Level, Academic Years 2005-2008

³ Further data collection regarding this subpopulation is required to understand the pattern of participation.

Education Level	ABE	ESOL
No School	0 (0%)	9 (1.0%)
Below 11 th Grade	209 (64.1%)	313 (34.2%)
High school diploma/GED	67 (20.6%)	126 (13.8%)
Some College	37 (11.3%)	244 (26.7%)
Undergraduate Degree	11 (3.4%)	177 (19.3%)
Graduate Degree	2 (0.6%)	46 (5.0%)
Total	326 (100%)	915 (100%)

Source: The RWALP

Analysis of the age patterns for learners in ABE and ESOL programs illustrates that there is a higher percentage of participation by younger (below 28) learners in the ESOL program than in the ABE program. The majority of ABE learners are 36 or older, but ESOL students represent a younger population. Lower participation in ABE programs by younger adults may be a result of more remediation in K-12 schools or students doing remediation in community colleges. Table 2.4 presents the age composition of learners in ESOL and ABE program components.

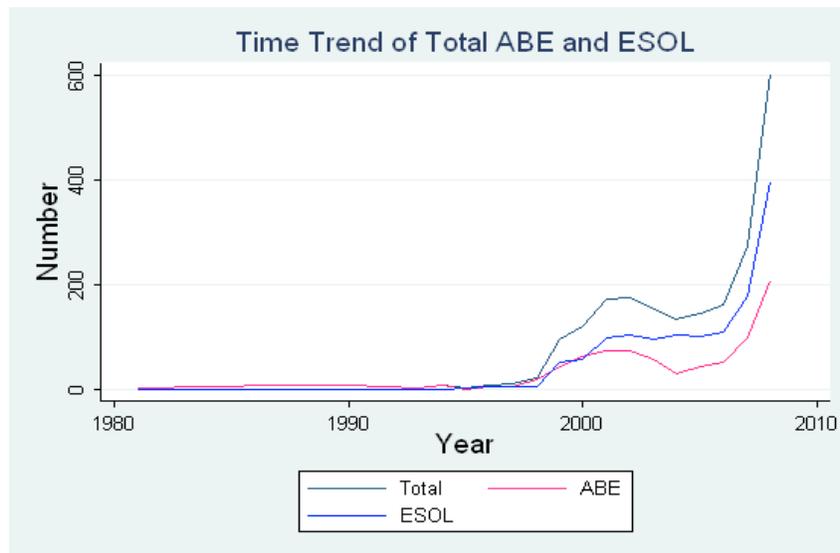
Table 2.4: ABE and ESOL by Age, Academic Years 2005-2008

Age	ABE	ESOL
0~28	63 (18.5%)	390 (39.2%)
29~35	67 (19.7%)	242 (24.3%)
36~46	91 (26.8%)	235 (23.6%)
47+	119 (35.0%)	127 (12.9%)
Total	340 (100%)	994 (100%)

Source: The RWALP

The dynamic change of ESOL and ABE programs is apparent when looking at time trend data. In this section, we present the time trend of both programs, with a focus on illustrating the patterns by gender and ethnicity.

Figure 2.1: Time Trend of ABE, ESOL and Total Learners, since 1981



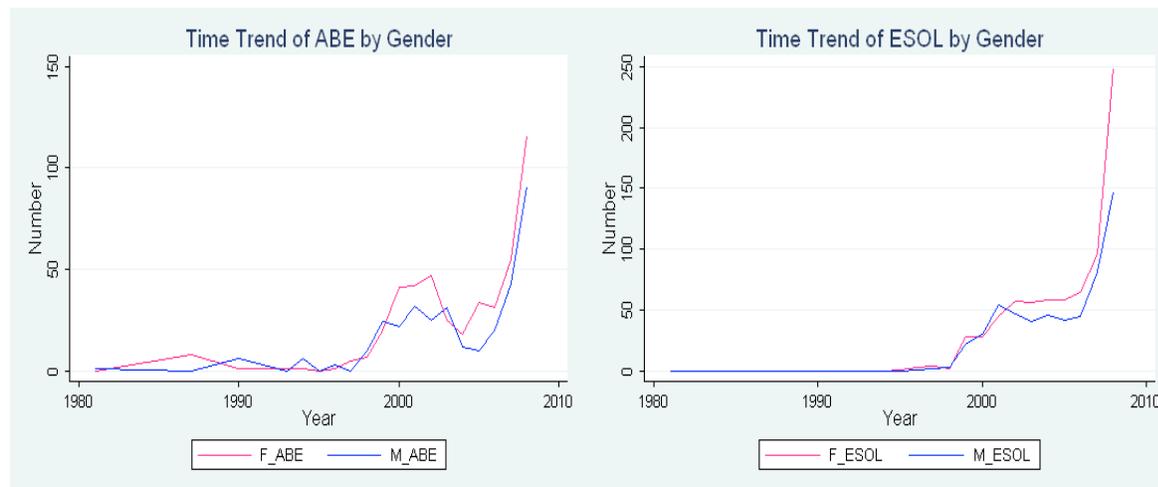
Source: The RWALP

As previously noted, the data for the RWALP was incomplete prior to 2000, thus the trends for these periods may not present a complete picture. Changes are evident over time in two key areas. First, there is a spike in participation in the RWALP in 1999. This shift may only be reflective of better record keeping, but with the data at hand, it is not possible to determine. A second shift is evident in 2007. We feel more confident about these data since record keeping was more comprehensive during this period. Exponential growth has occurred over the past three years in both of the major RWALP programs, with the largest growth of learners being ESOL learners.

A look at gender over time produces similar growth patterns that mirror the increases in participation. Generally, there are more women participating in ABE and ESOL programs than

men in recent years. In particular, the academic year 2008 witnessed the largest difference between female and male learners in both ABE and ESOL programs. (Figure 2.2 and 2.3)

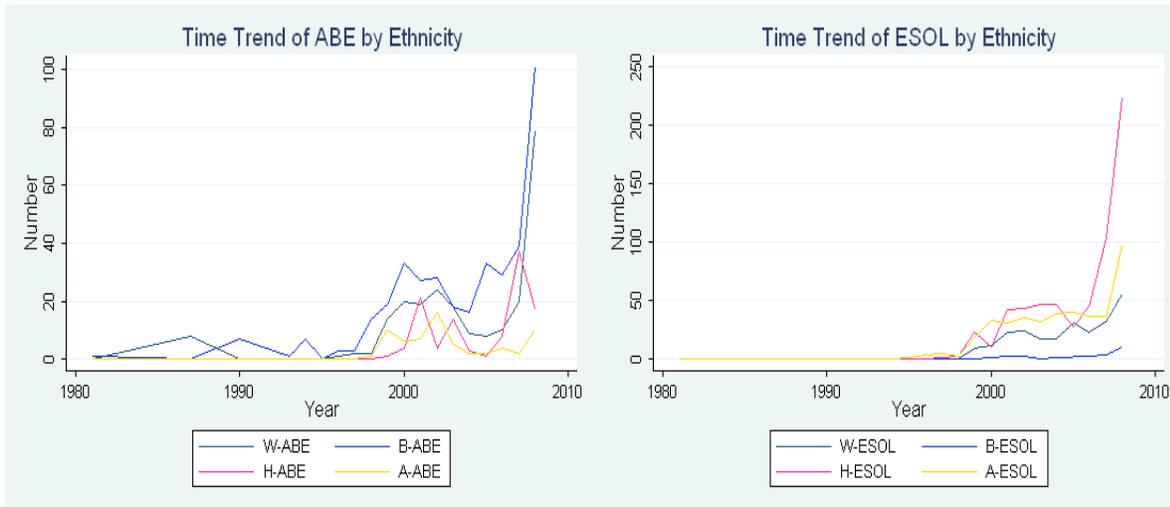
Figures 2.2 and 2.3: Time Trend of ABE and ESOL learners by Gender, since 1981



Source: The RWALP

An analysis by ethnicity in the programs also shows increased levels of participation that mirror the general trend of more learners being served. (Figures 2.4 and 2.5) Over time, ethnicity of learners in the ABE program was fairly consistent (White, Black/African American, Latino and Asian have similar patterns of change before 2007). However, after 2007, white and black learners become the dominant learner base in ABE programming. An explanation for the decrease in Latino and Asian participants may be that these learners are participating in ESOL programming instead. The number of blacks participating in ESOL programming has been consistent since 1996. For ESOL programming, the largest increase in ethnicity group participation occurs among Hispanic learners. The patterns for increased participation is similar among Asians, but not to the degree witnessed for Latinos.

Figures 2.4 and 2.5: Time Trend of ABE and ESOL learners by Ethnicity, since 1981



Source: The RWALP⁴

⁴ W denotes White, B denotes Black, H denotes Hispanic and A denotes Asian Americans.

III. **Literacy Impact Research**

A. Definition of Literacy

The concept of “literacy” has been defined and measured in a variety of ways. Literacy is not limited to reading skills, but includes a broad array of types of literacy. Most educators think that literacy includes a range of related skills that include reading, speaking, writing, and basic mathematical knowledge.

Theorists and literacy survey designers (Johnson & Onwuegbuzie, 2004) outline three major approaches in defining adult literacy. One form is to view literacy by levels of attainment, in which literacy is defined as the years of school or reading ages. This approach is simple and helpful for literacy-related research. However, the quantitative definition masks a person's true literacy when broad populations are considered. Foreign-born Americans or immigrants whose first languages are not English often come to the United States with low English literacy levels, which makes high education attainment difficult to identify using a grade level literacy measure for those people. The second approach to rating literacy uses a qualitative approach, which concentrates on describing the features or dimensions of literacy. This approach is not standard, since different survey designers may focus on different features of literacy, which makes it very difficult to compare literacy levels across different countries and historical periods. The third means to rate literacy requires a pluralist approach, which recognizes multiple modes of literacy such as social literacy, cultural literacy, functional literacy, basic literacy, higher-order literacy, etc. For the purposes of this report, literacy is defined in a functional way that has been widely accepted in recent years. The National Literacy Act of 1991 defined literacy as:

The ability to read, write, speak, compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one's goals and develop one's knowledge and potential.

National literacy surveys and international literacy surveys all use this functional definition of literacy.

B. Measurement of Literacy

The 2003 National Assessment of Adult Literacy (NAAL) recognizes and measures three kinds of literacy: prose, document, and quantitative literacy. These are defined as follows:

- *Prose literacy.* The knowledge and skills needed to perform prose tasks (i.e., to search, comprehend, and use information from continuous texts). Prose examples include editorials, news stories, brochures, and instructional materials. Prose texts can be further broken down as expository, narrative, procedural, or persuasive.
- *Document literacy.* The knowledge and skills needed to perform document tasks (i.e., to search, comprehend, and use information from noncontiguous texts in various formats). Document examples include job applications, payroll forms, transportation schedules, maps, tables, and drug and food labels.
- *Quantitative literacy.* The knowledge and skills required to perform quantitative tasks (i.e., to identify and perform computations, either alone or sequentially, using numbers embedded in printed materials). Examples include balancing a checkbook, figuring out a tip, completing an order form, and determining the amount of interest on a loan from an advertisement.

In the NAAL, each respondent was asked to answer a series of literacy tasks which were drawn from actual texts and documents. The final scores for each form of literacy were computed based on how many tasks the respondent answered correctly in each category. The ranges of prose, document, or quantitative literacy are all from 0 to 500. The survey designers divide the scale into four categories: Below Basic, Basic, Intermediate, and Proficient (see Table 3.1). The 2003 NAAL contains a sample of 19,714 respondents, ages 16 and older, located in households or prisons.

Table 3.1: Overview of the literacy level

Literacy	Below Basic	Basic	Intermediate	Proficient
Prose	0-209	210-264	265-339	340-500
Document	0-204	205-249	250-334	335-500
Quantitative	0-234	235-289	290-349	350-500

Source: The 2003 NAAL

According to the 2003 NAAL data, we can find that the average prose and document literacy levels for American adults fall in the lower numbers of the intermediate level, and the quantitative literacy level is basic. In addition, the distribution of literacy level is not even among ethnicity groups. Whites have the highest literacy level, while blacks and Hispanic Americans have the lowest level. (Table 3.2) Particularly, the quantitative literacy levels for blacks and Hispanics are nearly below basic.

Table 3.2: Average literacy scores of American Adults, by race/ethnicity

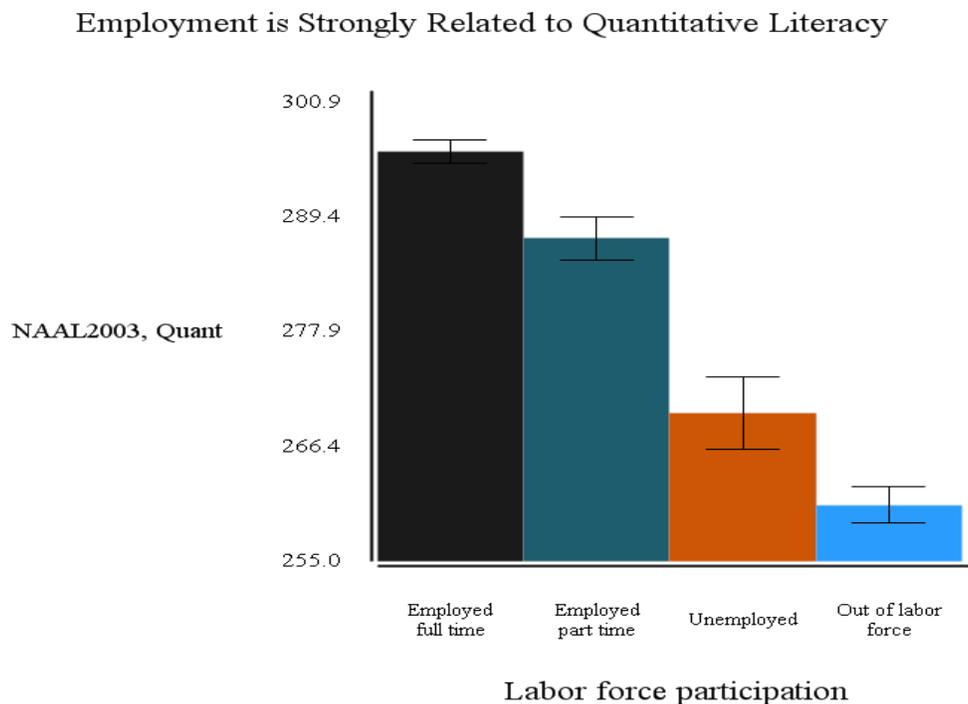
	National	White	Black	Hispanic	Asian/Pacific
Prose	275	288	243	216	271
Document	271	282	238	224	272
Quantitative	283	297	238	233	285

Source: The 2003 NAAL

C. Literacy and Employment

Based on the data set from the 1985 Young Adult Literacy Assessment Survey, Rivera (1992) concludes that quantitative literacy skills are a major factor raising the likelihood of full-time employment. According to the report of the 2003 NAAL, 75% of unemployed adults in the United States have reading or writing difficulties, which indicates a positive correlation between literacy levels and employment status. Following is an analysis of the 2003 NAAL data that highlights the relationship between quantitative literacy and employment based on national data⁵.

Figure 3.1: Relationship between Quantitative Literacy and Employment



Source: The 2003 NAAL

Figure 3.1 displays that people with higher quantitative literacy scores have correspondingly higher likelihood of employment. Individuals employed full-time have an

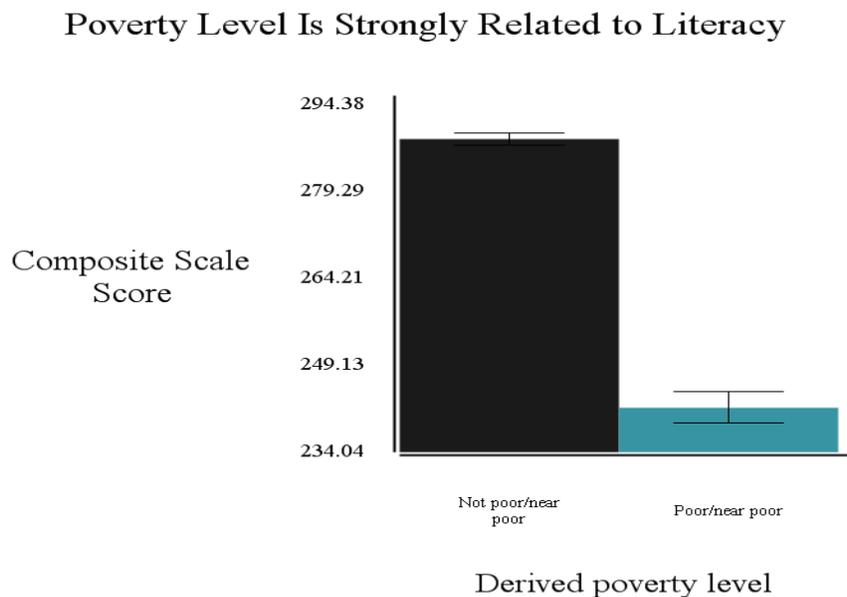
⁵ We did not prove but only assume a causal relationship between quantitative literacy and employment.

average quantitative literacy score of 296 compared to an average of 269.7 for unemployed individuals and 260.8 for those not in the workforce. Of note, all of these attainment levels for quantitative literacy are below the proficient level range (350-500). This analysis supports Rivera’s (1992) conclusion that quantitative literacy has a great impact on employment.

D. Literacy, Poverty and Welfare

Given the ties between literacy and employment, it is not surprising that literacy is closely connected with poverty and participation in welfare programs. Individuals with low literacy levels have difficulty obtaining employment given their low-skill base. The National Institute for Literacy estimates that 43% of adults with very low literacy skills live in poverty (1998). The 1992 National Literacy Survey shows that about 70% of adult welfare recipients have low level literacy skill. We posit that similar outcomes would apply on the local level.

Figure 3.2: Relationship between Literacy and Poverty



Source: The 1992 NALS

Figure 3.2 shows the relationship between literacy and poverty level based on the 1992 NALS.⁶ The composite score is the average of prose, document and quantitative literacy.

Individuals living below the poverty level have significantly lower literacy scores. Table 3.3 presents the scores on each kind of literacy for the poor and not-poor groups.

Table 3.3: Literacy Scores vs. Poverty, Public Assistance Programs

Literacy	Receive Supplemental Security Income?		Receive food stamps?		Receive public welfare payment?		Poverty Level	
	Y	N	Y	N	Y	N	Poor	Not poor
Prose	241	278	255	279	256	276	245	290
Document	235	273	251	275	253	272	241	284
Quantitative	243	286	254	288	252	285	240	291

Source: 2003 NAAL

Low income people often depend on public assistance programs. Literacy programs could help adults move out of poverty and achieve income independence, which ultimately reduces social costs. Table 3.3 compares the different literacy levels for people whether enrolled in public assistance programs or not. Those with lower literacy rates participate more in all three public assistance programs, Supplemental Security Income, food stamps, and public welfare payment. The following studies support the notion that literacy training could reduce welfare dependence for adults:

- The 1992 NALS data demonstrate that in the adult population as a whole, the likelihood of being on welfare goes up as literacy levels go down. Since literacy is a very important factor on welfare dependence, the efforts to reduce welfare dependence will be imperiled if literacy is ignored in welfare reforms. (Barton & Jenkins, 1995)
- A report from the National Center for the Study of Adult Learning and Literacy reviewed

⁶ Since the variable “Poverty” is not available in the 2003 NAAL, we have to use the 1992 NALS.

23 case studies of adult literacy programs and found that 80% of the programs reported an overall reduction in welfare dependence by their students. (Beder, 1999)

In summary, adult literacy programs do reduce dependence on public assistance programs and make sizeable improvements in people's self-sufficiency. Given the national research highlighting the impact of literacy on welfare and poverty, as well as the additional research reports summarized above, we conclude that the RWALP probably has similar outcomes for learners in the local region. Thus, as learners increase their literacy levels, it is expected that they will experience an increase in wages and a decrease in reliance on public assistance programs based on national estimates.

E. Literacy and Earnings

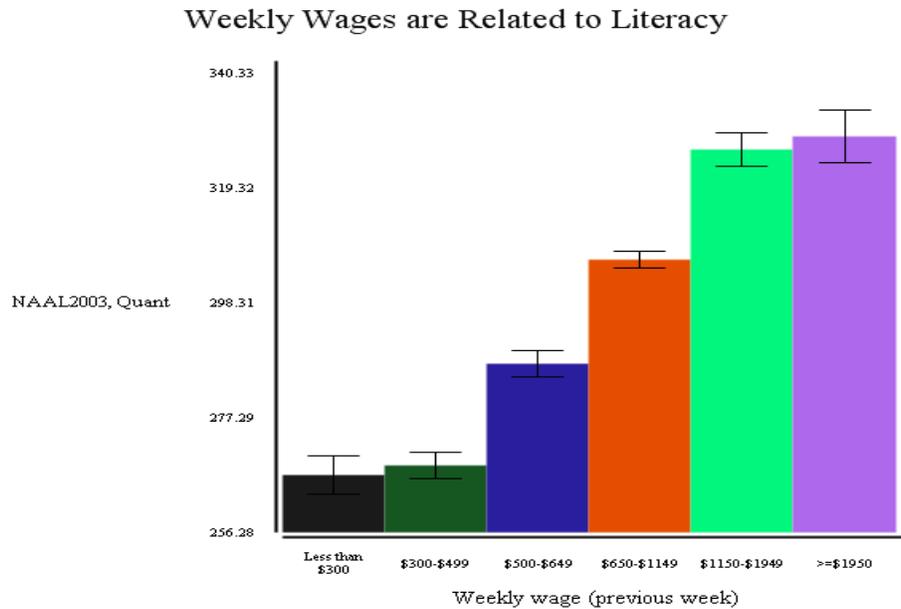
Based on the National Adult Literacy Survey, there are strong relationships between literacy and income. Adults in the lower literacy categories were far more likely than those in the higher levels to be in poverty and were far more likely to receive food stamps. They were also far less likely to receive interest from savings. (Kirsch, 1993)

The empirical relationship between literacy and earnings shows economic returns based on literacy levels. Denny, Harmon, and O'Sullivan (2003) used the International Adult Literacy Survey (IALS) to conduct a multi-country comparison of the impact of education and functional literacy on earnings. Their multiple regression model demonstrates a positive impact of literacy on earnings.

Using the 2003 NAAL data, we find that as the literacy score increases, weekly wages also increase. (Figure 3.3) As weekly wages approach \$1,150, the association between the literacy score and weekly wages diminishes. At this point, other factors, such as work experience and school performance, may affect weekly wages more than literacy. However, it should be

noted that when weekly wages are less than \$1,150, higher literacy skills have a significantly positive impact on weekly wages. Since most learners in the RWALP are in the lower income levels, it can be expected that literacy training has a positive impact on their weekly wages.

Figure 3.3: Relationship between Literacy and Weekly Wages



Source: The 2003 NAAL

Regression Model

To estimate the economic payoffs for increased literacy, we estimated a multivariate regression model. Our model is based on the well known human capital model in which weekly wages are related with literacy level and work experience (age is used as a substitute for work experience, a common practice in the literature). We estimate the natural logarithm of weekly wages as a function of the level of literacy using the ordinary least squares (OLS) regression:

$$\text{Log}(\text{weekly wages}) = a * \text{Literacy} + b * \text{Age} + c * \text{Age}^2 + e$$

where a is the estimate of the marginal effect of literacy on earnings, which measures the effect of a unit change in literacy score on the percentage change in weekly earnings. b and c jointly

measure the marginal effect of work experience (as proxied by age) on earnings⁷, and e is the random effort term.

Table 3.4 displays means, standard deviation, minimum and maximum, for variables used in our model. We find that the average quantitative literacy just reaches the intermediate level of literacy as described above. The average age is 37.1, which is very close to the average age of RWALP learners (39).

Table 3.4: Description of Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Weekly Wages	412.5	6.7	0	34000
Log of Weekly Wages	5.7	0.9	0	9.5
Age	37.1	13.5	16	99
Quantitative Literacy	289.6	58.6	0	500

Source: The 1992 NALS⁸

Regression Results

Table 3.5 presents the result of the regression model of the natural logarithm of weekly wages. The earnings return for quantitative literacy is 0.004, which means that a 1 point increase in quantitative literacy score leads to a 0.004 increase in logarithm of weekly wages. Taking the anti-log of 0.004 ($e^{[0.004]} = 1.004$), we can say that the estimated earnings gain due to a unit increase in quantitative literacy score is about 0.4%, controlling for all other variables such as “Age” and “Age Square”. The value of R-square is 0.265, which means that our model can explain 26.5% of the variation in weekly wage.

⁷ b is positive showing the positive relationship between earnings and age and c is negative showing the typical pattern that earnings rise with age at a decreasing rate.

⁸ This study choose to use the 1992 NALS instead of the 2003 NAAL in our regression since Literacy cannot be set as an independent variable in the 2003 NAAL.

Table 3.5: Estimated Regression Coefficients

	Coefficient	Standard Error
Constant	1.83	0.086
Quantitative Literacy	0.004	0.000
Age	0.136	0.004
Age Square	-0.001	0.000
R-square	0.265	

F. Impact of the RWALP on ESOL Learners' Earnings

In the RWALP, ESOL learners take the BEST Plus tests when they enter and leave RWALP.⁹ BEST Plus also defines literacy as functional literacy, which is the same basic approach used in the 1992 NALS. However, the scale for BEST Plus is 662, whereas the NALS is 500. Despite these differences, there is a strong relationship between BEST Plus and NALS. These methodologies will be further examined later in this document. NALS generally utilizes the following methodology in calculating their scores. Each assessment question is composed of a prose, document, or quantitative literacy task (i.e., instructions) and the corresponding stimulus material. Stimulus materials are the written text or printed material from which the answer to the task may be found or derived.

Prose questions require respondents to perform a prose task (e.g., read an editorial) using one of five types of prose stimulus materials: expository, procedural, persuasive, narrative, and poetry.

⁹ ABE learners take the Test for Adult Basic Education (TABE) test when they enter or leave the RWALP. However, since TABE uses level grades, our regression results obtained from the 1992 NALS cannot be applied to the ABE learners.

Document questions require respondents to perform a document task (e.g., complete a tax form) using one of seven types of document stimulus materials: list, table, map/diagram, form, bill, graph, and other.

Quantitative questions require respondents to identify, describe, or perform an arithmetic operation (addition, multiplication, subtraction, and division) either in prose or document materials, since there are no texts that are unique to quantitative tasks. The majority of NALS quantitative tasks (39 out of 47) are embedded in document materials.

Hybrid questions require respondents to perform a task using a stimulus material that is both a prose and document structure. If the respondent is required to process the prose segment, the question is coded as a prose task, but if the respondent is required to process prose and document segments, the question is coded as a hybrid task. Since hybrid tasks account for only 4 out of 152 tasks in 2003, there are too few with which to do any specific analysis. (NALS, p39)

When you compare this methodology for testing literacy to the BEST Plus methodology that the RWALP uses, you can see the methodologies are very similar. This test is administered during the initial learner assessment. The BEST Plus test uses the following methodology.

BEST Literary measures adult English language learners' ability to read and write in English. The primary objective of many adult English language learners is to develop the language and literacy skills they need to meet their personal, community, academic, and employment goals. The National Adult Literacy

Survey and the National Assessment of Adult Literacy define literacy as 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’.

Specific tasks in BEST Plus include reading dates on a calendar, words and abbreviations on a train schedule, price on tags, and classified advertisements; finding phone numbers in a list; writing a check; and composing short written communications. Grammatical structures identified as necessary for the accomplishment of these tasks include the simple present and present progressive tense, yes/no and wh-questions, negation. Language functions include imparting information, requesting information, and seeking clarification.

The methodologies of the two programs focus on the same type of questions and evaluate similar types of literacy issues and concerns. Because of these similarities, we are comfortable relating the data collected using BEST Plus to the data collected using NALS methods and applying a scaled score when comparing the two scores from the national data and the RWALP data.

The average pre-test score for ESOL learners taking the Entry BEST Plus test is 434, and the average post-test score in Exit BEST Plus test is 493. ESOL learners average an increase in literacy of 59 points in the BEST Plus system. By rescaling BEST Plus to the 500 range found in NALS, the difference becomes 44.6. $(59 \times 493/500)$

Using the result we produced in the last section that the literacy earning gain for quantitative literacy per point is about 0.4%, we conclude that the RWALP is estimated to improve the weekly earnings of ESOL learners by 17.8%. $(44.6 \times 0.4\%)$

G. Literacy and Health Status

Health literacy is defined as: "The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions." (U.S. Department of Health and Human Services, 2000)

According to the American Medical Association (1999), poor literacy is a stronger predictor of a person's health than age, income, employment status, educational level, and race. The Agency for Healthcare Research and Quality 2004 evidence report, *Literacy and Health Outcomes*, reviewed health literacy outcome studies and concluded that low literacy, as measured by poor reading skills, is associated with a range of adverse health outcomes. (Berkman, 2004)

The reason literacy affects one's health status is that patients are required to carry out basic tasks such as analyzing relative risks and benefits, calculating dosages, and interpreting test results. In order to accomplish these tasks, individuals may need to be:

- visually literate (able to understand graphs or other visual information),
- computer literate (able to operate a computer),
- information literate (able to obtain and apply relevant information),
- numerically or computationally literate (able to calculate or reason numerically).

(National Network of Libraries of Medicine)

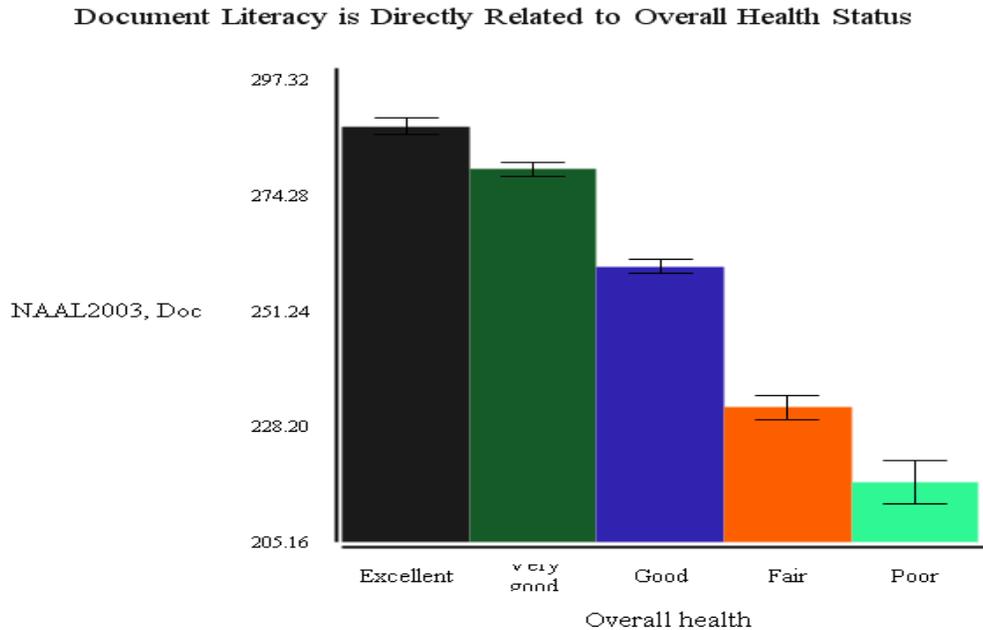
Empirical Linkages between literacy and health status

According to the results of the national literacy surveys, adults with low literacy skills were more likely than those with higher literacy levels to have health conditions which limit their activities. (National Center for Education Statistics, 1992) There are both direct and indirect consequences of low health literacy. The direct effects include non-compliance or medication

errors, such as diagnosing a disease at a later stage. The indirect effects are harder to measure, but may include insurance issues, accessibility to health care and poor health behavior choices. According to the Report on the Council of Scientific Affairs, groups with the highest prevalence of chronic disease and the greatest need for health care had the least ability to read and comprehend information needed to function as patients (JAMA, 1999).

Using the 2003 NAAL data, we looked for a relationship between literacy and self reported health status. (Figure 3.4) We used document literacy since it is more closely related to health issues than prose or quantitative literacy. The data showed that individuals who have better performance in document literacy have better overall health status. The literacy levels for people with excellent, very good, or good health status are all intermediate; levels for people with fair or poor health status are both basic. It should be noted that the apparent correlation between document literacy and health status does not prove causality, but just association between the variables. However, in our later analysis, causality between literacy and health status will be assumed.

Figure 3.4: Relationship between Literacy and Health Status



Source: The 2003 NAAL

Economic impact of low health literacy

The cumulative cost to the U.S. economy of poor health literacy is estimated at between \$106 billion to \$236 billion per year based on a study from the University of Connecticut. (Business Wire, 2007) The reason for this huge cost is that people at lower literacy levels utilize more hospital resources, such as longer hospital stays, which is the primary source of higher health care expenditures. Other factors, such as more doctor visits, ineffective use of prescriptions, or misunderstanding about treatment plans also have financial consequences. The National Academy on an Aging Society (NAAS) found the following facts between literacy and the use of hospital resources:

- Among adults who stayed overnight in a hospital in 1994, those with low health literacy averaged 6% more hospital visits, and stayed in the hospital nearly two days longer than

adults with higher health literacy skills.

- Among adults with at least one doctor visit in 1994, those with low health literacy skills had on average one more doctor visit than adults with higher health literacy skills.
- When self-reported health status is taken into account, patients with low health literacy skills had fewer doctor visits but used substantially more hospital resources.

In a study of Medicaid participants, those who have the lowest literacy levels have average annual health care costs of about \$13,000 compared with \$3,000 for all Medicaid participants in the study. (Weiss, 1999) In addition, the National Academy on an Aging Society estimated that additional health care costs due to low health literacy were about \$73 billion in 1998 dollars. While a significant share of the health care costs fall on the patients with low health literacy skills, health care providers and those that finance those providers share the burden. Medicare pays 39% of the expenditures. Medicaid pays more than \$10 billion dollars, or 14% of the additional health care expenditures. Therefore, good health literacy can improve the efficiency of medication and reduce Medicare and Medicaid expenditures. Ultimately, all of society will benefit from better health literacy.

H. Estimated Lost Costs of Health Care due to Low Literacy in the Williamsburg Community

Based on the 2003 NAAL, the illiteracy rate¹⁰ is 7% in Williamsburg and 8% in James City County. The adult population in Williamsburg is 6,462 and 41,617 in James City, the total illiterate adult population in Williamsburg and James City County is 3,430. (Range from 1,519 to

¹⁰ In the 2003 NAAL, illiteracy is defined as that people scored *Below Basic* (see Table 2.1 for details) in prose and those who could not be tested due to language barriers. In addition, the 2003 NAAL produces a 95% credible interval and a mean value for the illiteracy rate. (<http://nces.ed.gov/naal/estimates/StateEstimates.aspx>)

6,092).¹¹

According to the Journal of the American Medical Association (1999), patients with low literacy levels had average annual health care costs of \$12,974, four times the \$2,969 for the overall population studied. This means that extra health care costs for a patient due to low literacy is \$10,005 (\$12, 974 - \$2, 969) per year.

Using these national estimates, we can estimate that Williamsburg/James City County experiences approximately \$34,317,150 (3,430 x 10,005) more in health related expenses per year due to low literacy. (Range from \$15,197,595 to \$60,950,460).

I. Literacy and Crime

Literacy also correlates to crime. Some basic facts about the inmates in the U.S. Prison system: (Barton & Coley, 1996)

- 46.5% of prison inmates do not have a high school diploma.
- The average reading level of prison inmates is very low: below the fifth grade in one study, below eighth grade in another.
- 70% of prisoners scored in the lowest levels of literacy on the National Adult Literacy Survey. This means that they are not adequately prepared to perform tasks like writing a letter or explaining an error on a credit card bill.

The National Institute for Literacy (2001) announced that quality education is one of the most effective means of crime prevention. Education can help prevent young people from committing crimes and can greatly decrease the likelihood that people will return to crime after being released from prison. Barton and Coley (1996) asserted: “Without training and education,

¹¹ We have a range for the illiterate adult population because we use the 95% credible interval of illiteracy rate to compute the population.

even if they [prisoners] are trying, they're not going to make it when they get out. This is where a whole lot of our youth are these days, especially minority youth. And for many of them, it's their last chance for education". Researchers found that correctional education¹² or literacy programs have a positive impact on prisoners' employment and earnings after release. Meanwhile, it could reduce government expenditures on corrections.

- Finding Employment: Inmates who have been in correctional education programs are more successful than non-participants at finding gainful employment upon release. A Virginia study found that only 54.6% of former prisoners on parole who had had no educational programming in prison were employed for a period exceeding 90 days. For paroled inmates who had completed an educational program in prison, the figure was 77.9%. (Hull, 2000)
- Earnings: Released prisoners who have been in correctional education programs earn more than released non-participants. One study looked at wages reported to state labor department and found that after one year away from prison, former inmates who had been in correctional education programs earned nearly 30% more than inmates who had not been in these programs. (Steurer, Smith, & Tracy, 2001)
- Costs: Correctional education programs pay for themselves and then some. Steurer and colleagues (2001) looked at data for Maryland and, taking into account reductions in recidivism related to prison education, concluded, "...last year's \$11,700,000 annual state budget for correctional education returned at least \$23,280,000 to the state." Furthermore, education programs dramatically diminish the financial burden to the taxpayer.

¹² There are two basic types of correctional education programs – vocational training and literacy development. Vocational training courses focus on the acquisition of skills that are directly transferable to a workplace, such as appliance repair. Literacy development courses are loosely based on the traditional classroom model centered on the improvement of reading and math skills. (Audrey and Jessie, 2004)

According to Jeff Galli of the Utah State Office of Education, the cost of incarcerating one prisoner per year is approximately \$22,000. (as cited in Steurer, Smith & Tracy, 2001)

J. Estimated Costs of Incarcerations due to Low Literacy in the Williamsburg Community

In this section, we estimate how much costs of incarceration result from illiteracy in Williamsburg and James City County. First, recall that the total illiterate population in Williamsburg and James City County is 3,430. In addition, according to the National Institute of Corrections, the incarceration rate of Virginia in 2007 is 490 per 100,000 persons in the population.

According to The Three State Recidivism Study, re-incarceration¹³ rates for the prison population who had participated in correctional education were 21%, compared to 31% for non-participants. (Hull, 2000) Since literacy education is the major part of correctional education, we can conclude that literacy could reduce re-incarceration rates by 10%, which is a reliable estimate of the impact of literacy training in prison. (31%-21%) It should be noted that other social costs as initial incarceration, court costs and property damage can also be avoided due to literacy education before individuals commit crimes, but measuring it is beyond the scope of this study.

Based on a report from the U. S. Department of Justice, the average cost of incarceration per inmate per year in Virginia is \$22,942 in 2001. Therefore, the cost of incarceration due to illiteracy in Williamsburg and James City is \$38,559 (3,430 x 490/100,000 x 10% x 22,942) per year. (Range from \$17,076 to \$68,484)

¹³ Re-incarceration is only a subset of those committing crimes. We evaluate whether literacy training reduces *re-incarceration* rates instead of *incarceration* rates, since it is very difficult to obtain how much literacy training can reduce the incarceration rates.

IV. Training Techniques for the RWALP

This report addresses the economic impact of RWALP. In order to understand the best ways to maximize RWALP's economic impact in the Williamsburg community, this section will look into some best practices used by other adult literacy programs. Using this information we will give suggestions for RWALP to consider on how the Program could improve its adult literacy training and therefore produce more economic benefits to the Williamsburg community.

By reviewing case studies, we will be looking into the best practices used by adult literacy programs. We look for adult literacy studies that came from communities similar to Williamsburg, programs that were associated with colleges, and programs that use one-on-one tutoring. We also compared the effectiveness of programs using other tutoring methods that could be applied to the RWALP and provided critiques regarding the types of methods used by the RWALP. From this, we will gain insight into better adult literacy training techniques to use in the Williamsburg community.

There are several topics that need to be analyzed when reviewing the RWALP. We will be focusing on the main strategies and techniques used by the RWALP in the education of their learners and their tutors. Topics such as tutor-learner interaction, community appropriate techniques, and ESOL specific techniques will be examined.

A. Tutor-Learner Interaction

This section will look at four main case studies. First, we will look at Elisabeth Hayes' 1996 study on college tutors in the field of adult literacy. We will then move to Marion Terry's study which looks into the importance of interpersonal relations in adult literacy programs.

Lastly, we will examine both the Alisa Belzer study and Kelli Sandman-Hurley study which discuss issues with tutor training.

Hayes (1996) researched the experiences of a college student and the issues that the tutor and the learner had in finding effective strategies in education. This study was conducted at the University of Wisconsin-Madison's Student Literacy Corps program in 1995. The program itself is similar to the RWALP in that it is a college-based program that makes use of students as tutors in a nontraditional classroom setting. The tutoring took place in a community center. The case study argues that this format gave the tutor a broader awareness of students' lives than could be developed in other environments. This setting contributed to the tutors' understanding of the situational factors that affected students' participation, and of the broader connection between multiple disadvantages like poverty and illiteracy. Like RWALP, the study found that one of the major components of a learner's success is the learner's participation and retention. This further shows the need for initiatives to increase learner retention. Initiatives like RWALP's \$20 intake fee, which give the learners additional motivation to stay with the program.

According to Hayes (1996), the accessibility of the community center did not strengthen the learners' motivation to return to class. The study showed that since learners had less time to spend with their tutors individually in the small group setting, the tutors were less able to gain insights into the learners' lives and experiences. This type of setting did not allow the tutor to develop a relationship with any of the learners. So, any understanding the tutor had about the learner was drawn from her observations of their behavior and the tutor's perspectives, not the personal relationship that they developed. The study stressed the importance of informal conversations during tutoring sessions in order to develop a rapport with the learners. Hayes

found that there was no relationship between poor attendance and the type of adult literacy instruction. Furthermore the study indicated that the tutor-learner relationship is the most important part of retention.

Based on these findings, the program changed some of the ways it operated. A key finding of the research was that the tutor needs more exposure to students' lives beyond the learning environment. In developing programs, it is important to incorporate opportunities for tutors to see the communities and contexts in which learners live and work. Through observations of learners' lives outside the classroom, the tutors can get a more concrete understanding of the barriers facing the learners. The study recognizes the negative influence of social context on learners' educational success. However, simple exposure to learners' life situations does not seem adequate enough to make tutors' aware of the factors that create and sustain educational disenfranchisement. To help tutors develop an understanding of barriers, they need to be exposed to different interpretations of learners' behavior, issues such as understanding how for some students dropping out of high school is a "sensible solution" in light of their own context and failures on the part of the school to adjust to learners' culture and circumstances (Hayes, 1996).

Over time, the program also adjusted the tutor-learner relationships. The program understood that an ongoing relationship can be difficult to maintain in any situation given the generally erratic attendance of adult literacy students. However, extended contact with a learner provides tutors with the opportunity for greater rapport and greater insights into adult learners' perspectives on literacy learning. The program now requires all tutors to interview learners about their backgrounds, goals, and educational experiences, as one strategy to enhance these

insights. To further develop these relationships, the program initiated panels of adult literacy learners to speak with the tutors about their experiences. The study concluded that tutors gain valuable insights into reasons for the success or failure of adult literacy education through these panels. (Hayes, 1996)

Terry (2006) also underscored the importance of interpersonal relationships in adult literacy education. This study took place in a community-based adult literacy program that provided one-on-one tutoring. This is similar to the methods used by RWALP. The program also did some interaction in a small group setting. The study looked into how the development of interpersonal relationships between the tutor and the learner affected the tutoring process. The study is filled with stories of how individual learners had touched their tutors' personal lives, and the learners' interviews and compositions contained accolades for their tutors. These data were taken from seventy stakeholders from two adult literacy programs in Manitoba, Canada.

The program instituted a system that allowed the learners to choose a tutor that they would feel most comfortable bonding with. To accomplish this, the learners were asked to pick someone they would feel comfortable with based on the information the tutors gave the program. The adult development of these tutor-learner relationships was a critical factor of the program's success. The study stated that tutors and learners took breaks and ate lunch together, called each other by their first names, and got to know about each other's outside lives. Learners and their significant others were especially quick to point out that the roots of their satisfaction with the literacy programs lay in the way that students were treated as adult equals to their instructors, partners in the learning process. Above all, learners and tutors described reciprocal tutor-learner

relationships based on mutual trust and respect, manifested in a level playing field. This created an environment where learners and students feel welcome. (Terry, 2006)

Terry (2006) also emphasized the importance of the interpersonal relationships that learners had with other learners. The program itself focused on one-on-one tutoring, but would also have small group meetings occasionally. These meetings would have tutors and learners who were at similar levels in the learning process. They found that these meetings were very beneficial. The study highlighted the effects of peer relationships on overall life satisfaction. Learners appreciated the opportunity to meet other students from very different racial and socio-cultural backgrounds. Learners also enjoyed the program's tradition of having students cheer to celebrate each other's successes at all academic levels. Learners of both genders expressed relief that their programs were devoid of judgmental peer groups.

While there are differences between the Terry study and the programs offered at RWALP. The fundamental goals of tutor training, learner retention and adult learner training are the same. With these findings in mind, the program made the following recommendations for sessions that maximize the emotional and academic benefits that develop from positive tutor-learner and learner-learner relationships, in literacy and other adult education settings:

- That tutors make students feel welcome in their sessions, through such means as arranging furnishings less formally, engaging in casual conversation at the beginning and end of class sessions, and making refreshments available.
- That tutors take steps to ensure that the tug-of-war between intellectual stimulation and emotional support does not adversely affect classroom dynamics.

- That adult education programs develop clear policies regarding how staff members are to approach the personal problems of students.
- That tutors attend professional development workshops designed to help them learn how to foster positive relations among their learners, and how to combat interpersonal dissension and strife. (Terry, 2006)

The last point brings up the question of how effective tutor training is for adult literacy tutors. Two case studies on the topic of effective tutor training in adult literacy come to very similar conclusions. The studies (Belzer, 2006; Sandman-Hurley, 2008) concluded that the skills that the tutors gained in their training are an important part of the learning process and are mainly the skills that they use during their tutoring sessions. Furthermore, the studies indicated the importance of follow-up training sessions after the tutors meet with their learners. RWALP has just expanded its tutor training to the ten hours of training described above. This included a one hour follow up tutor training session.

Belzer (2006) concluded that most adult literacy programs invest heavily in upfront training for volunteers, but that continuous training support was necessary after a tutor and a student had gotten to know each other, established working routines, and begun to spend significant time reading together. The research pointed out that the additional training should take place after a preliminary orientation and should focus on big ideas, such as the principles of adult learning, learner and tutor roles, selection of and access to instructional materials, and some very simple ideas for getting started.

According to Sandman-Hurley (2008), tutors often felt unprepared for their tutoring sessions. The study states that one possible explanation is that tutors do not have the opportunity

to observe how the strategies they are taught in a training session will translate when they are matched with a learner. The study states:

A reason that tutors may not believe they are prepared is that, as tutoring sessions progress, tutors may encounter issues that were not addressed in tutor training, leading to a retrospective perception that they were not prepared. It is important to evaluate increasing the perception of preparedness by tutors. It is assumed that if tutors are more secure with their abilities, they will be more effective. When working with the hardest-to-teach learners, tutors need to be confident enough to implement what they are taught. However, this confidence should be tempered by the notion that teaching reading is a craft that takes practice to learn. This is why the follow-up meeting after tutor training may be of great importance. (Sandman-Hurley, 2008)

Both the Belzer (2006) and Sandman-Hurley (2008) stress the importance of follow-up training sessions after the tutors have met with their learners.

After comparing the information gathered from all of the preceding case studies to the practices and techniques of RWALP, it has led us to make the following recommendations in regards to tutor-learner interaction. The studies show that RWALP has chosen the right type of environment, which is a nontraditional classroom setting, where learners work one-on-one with their tutors. The studies have shown that this is the most effective way to increase learner retention. The one-on-one environment is also the most conducive way to facilitate bonding between the learner and tutor. It allows them the opportunity to become acquainted on a personal level. These tutor-learner relationships in turn facilitate the learning process.

Furthermore, the ten-hour training that the tutors are now required to complete at the RWALP seems to be in line with the training practices laid out by Belzer (2006) and Sandman-Hurley (2008). The program has an initial training session with a follow-up session after the tutors have met with their learners. This is the type of training technique that our research indicates is most effective.

We would suggest that the RWALP incorporate a few of our findings from case study best practices into their program. First, the program should require all tutors to interview learners about their backgrounds, goals, and educational experiences, as one strategy to enhance the tutor-learner relationships. We know that currently the tutors ask the learners about their goals, but we feel this questioning should be expanded to further develop relationships and increase retention. Second, we recommend that the RWALP incorporate some kind of small group meetings into their program in addition to the one-on-one tutoring. This will develop learner-learner relationships and allow for learner bonding and support. Third, learners and tutors should be matched on their ability to relate with one another instead of solely an availability basis. This will help create a more comfortable and productive tutoring experience for both the learners and tutors. Fourth, the RWALP should incorporate Terry's (2006) study recommendations that are listed above into their program. These four recommendations include making students feel welcome in their sessions, providing emotional support for the learners, establishing clear tutor policies, and having tutors attend professional development workshops.

Lastly, the program should evaluate their tutor training methods and schedules and the training's effect on learner outcomes. In the long term, the program should implement additional follow-up training sessions to their tutor training in the future. These additional hours will allow

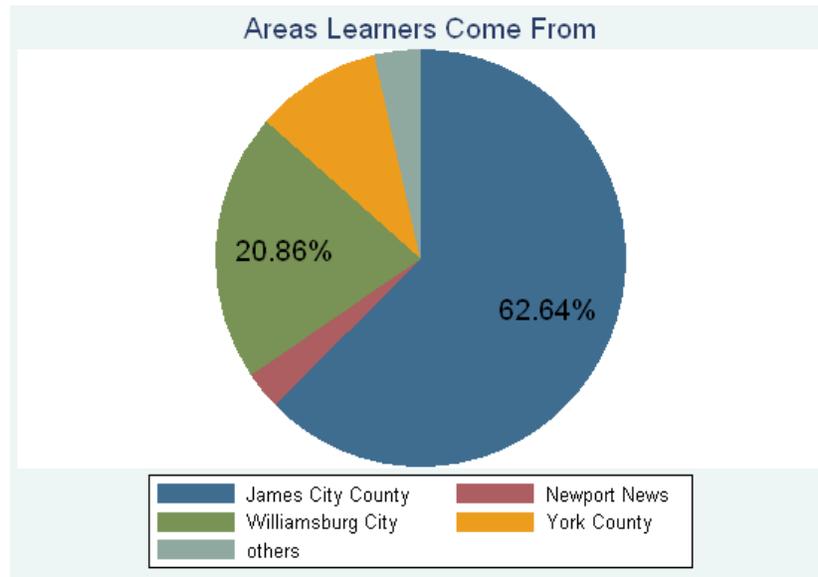
the tutors to talk about issues they are having with their learners and give them the opportunity to discuss how to deal with these issues. With the recent increase to ten hours of training, we feel that the timing is not right for another increase. Over time, there should be additional training added, but at this time the overall amount of training should be kept at ten hours. However, we do feel that a reduction in the initial training offset by an increase in follow-up training could be a more effective allocation of the ten hours of training. This will allow the tutors to talk about issues they are facing in their sessions and go beyond just general theory.

It is also important to note that since the RWALP instituted the ten hours of training, they have seen a drop in the number of tutors they have volunteering. From July 1 to November 12, 2008, the program had 159 tutors working in the program. Of the 159 tutors, 57 were William & Mary students. However, from July 1 to November 12, 2009, the program had 132 tutors in program, of which 27 were William & Mary students. We will address tutor retention later in the report.

B. Community Appropriate Techniques

The Williamsburg community where the RWALP is located consists of approximately 63,000 people when including James City County. The program itself is on the campus of the College of William & Mary and in 2009 received 20% of its tutors from the college community.

Figure 4.1: Areas Learners Come From, Academic Years 2005-2008



Source: The RWALP

From this graph, we can find that most learners in RWALP are from James City County and Williamsburg City.

While little has been written about adult literacy programs in communities the same size as Williamsburg or about college-based programs, we do feel that one study conducted by Ziegler (2008) in Restin County (a pseudonym), which has a population of approximately forty thousand individuals, would give us some insight into the best practices for Williamsburg.

Ziegler (2008) indicates that Restin County is unique, but shares many of the challenges faced by similarly-situated smaller communities that desire to link adult literacy and basic skills to community development. The study stressed the following factors which are necessary for effective tutoring: relationships in tutoring, partnerships as a way to structure relationships, the value of broad participation, social capital as a way to conceive collaborative relationships, and learning as the foundation for both program development and program content.

It was found that supportive relationships are fundamental assets in educational, economic, and community development. A collaborative process among the people creates a structure for the community to harness the social cohesion for a mutually beneficial goal. As they work with the community, adult literacy programs can cross social boundaries. This is why partnerships are important to adult literacy. The Restin County study indicates that community partnerships can strengthen local adult basic education programs and at the same time open complementary avenues for adult literacy that serve community and individual needs.

By involving local employers, small communities can develop the work force that is already present in the community. This helps the individual by developing their personal reading skills while at the same time giving the employer a better worker. This is due to the fact that by connecting with other individuals and groups in the community, learners may increase their access to opportunities to develop their literacy skills outside the classroom. These opportunities would otherwise be unavailable to them. Furthermore, there should be an increased focus on the importance of the learner's social capital, cooperation, mutual benefit, and networking when developing adult literacy programs. The study shows that there should be emphasis placed on locally-identified needs.

The RWALP currently has working relationships with employers throughout the Williamsburg area. Through these partnerships, the program enhances the economic development, human capital, and social capital of Williamsburg. It is our recommendation that the RWALP continues its attempts to enhance partnerships with the community as a whole and strive to expand partnerships with employers throughout Williamsburg. In addition, it would be beneficial to cultivate the program's close ties with local government. While it is unclear what

kind of partnership possibility there would be, it is an avenue that should be explored. The Ziegler (2008) study makes it clear that any increases in partnerships throughout the community would be beneficial not only to the learners and the program, but to the community as a whole.

C. ESOL Specific Techniques

According to the RWALP, they have watched as its client base has shift over the past twelve years from 70% ABE and 30% ESOL to where it is now at 25% ABE and 75% ESOL. (Figure 1.1) The 1990 Census found that nationally, half of all immigrants who had arrived within the previous three years did not speak English. In the 2000 Census, of the over 37 million adults 18 or older who reported speaking a language other than English at home, more than 8 million did not speak English “well” or “at all”, and an additional 7 million did not speak English “very well.” Thus, at least 15 million adults would benefit from ESOL instruction, a number that far exceeds the capacity of current adult ESOL programs. These trends show the growth of the ESOL population and how the need for ESOL training has risen dramatically over the past decade. (Crandall, 2004)

Studies have found some useful techniques that can be used in the education of adult ESOL learners. Yang (2005) found that, like ABE learners, it is important to listen to ESOL learners’ needs. This includes such considerations as asking learners exactly what skills they wish to learn. However, one difference is that the study indicated the importance of family support for the ESOL learner. This support was cultivated by asking ESOL learners to do 15 minutes of homework/practice with their family. This type of family activity was mainly used as an effort to get the families involved in the development of speaking, reading, and writing skills. We have seen that many of the learners are referred to RWALP by friends, family and

employers. This shows that the learners' friends, family and employers are already involved in the learners' development and that this type of homework/practice would be appropriate at RWALP.

The study also found that while ESOL learners are often eager to learn, they do not know how to learn. For example, the learners said they tried to watch TV or listen to the radio, but found literally no improvements after some time. The study then stated the importance of good study skills that will help the ESOL learners learn more effectively. These include techniques such as:

- First, read aloud from a text slowly, preferably repeating after a recording. Reading aloud slowly forces the learner to pronounce every sound clearly, and thus develops the flexibility of the speech organs. Reading after a recording helps the learner to imitate correct pronunciation, and enabled them to develop a sense about the natural flow of the language and made many language structures handy for use in speaking or writing.
- Second, find materials conforming to the students' English level. Language input far beyond the learner's level (e.g., original movies, TV and radio programs) will result in no comprehension, and therefore, no persistence by the learner.
- Third, keep an English diary, which is a persistent, economical way of practicing in English. (Yang, 2005).

Burt, Peyton, and Van Duzer (2005) also investigated the best support structures for ESOL learners and found:

Some of the suggestions for working with adult English speakers based on research may be of use with English language learners, such as teaching letter-sound correspondence and word analysis skills and providing instruction in comprehension strategies. However, other suggestions, such as using nonsense words in instruction, or relying on context clues to build vocabulary knowledge, are not useful with nonnative English speakers. Difficulties arise because of cultural differences, gaps in English oral vocabulary between English speakers and English language learners, and interference from the native language. Instructors need to consider these differences when planning and delivering instruction for adult English language learners. (Burt, 2005).

The Burt study indicates the importance of developing separate curricula for ABE and ESOL learners. There are divergent training techniques needed for ABE and ESOL learners. Currently, the RWALP uses different teaching methods in training its ABE learners and its ESOL learners. In order to add additional tutors and further tutor specialization in ESOL training, it is our recommendation that the program implement the following procedures:

- Allow tutors who gain certification through the Virginia Adult Learning Resource Center to skip a portion of the 10 hours of training. This will allow tutors to gain certification that they can take with them after they leave the program.
- Work with the College of William & Mary to give course credit to student volunteers who complete additional training and tutoring in ESOL. This will be an incentive for students to work as tutors with the program.

By implementing these recommendations, the ten hours of training that the program requires can become a more viable option for student workers.

V. Conclusion

The RWALP has served the Williamsburg community since 1975. Through its long standing partnership with the College of William & Mary, the program has established ABE and ESOL programs that allow adult learners to gain the skills they need in their professional and personal lives.

It is our hope that the recommendations and data evaluations set forth in this report can be useful in future program planning, tutor training and data retention. The program is on the verge of a major transition into its new home at William & Mary's new School of Education building. During this transition the program will have the opportunity to make changes to adapt to their new environment and give themselves the ability to serve the learners in the most effective way possible.

By reviewing several studies on literacy and using the data from 2003 National Survey of Adult Literacy, we find strong correlations between literacy, economic development, health status and crime, which are summarized as follows:

Individuals with low literacy have difficulty obtaining employment given their low-skill base. For instance, 75% of unemployed adults have reading or writing difficulties in the 2003 National Assessment of Adult Literacy. Moreover, quantitative literacy skills are a major factor raising the likelihood of full-time employment. Adults in the lower literacy levels were far more likely than those in the higher levels to be in poverty and were far more likely to be on food stamps than to report receiving interest from savings. The 1992 National Adult Literacy Survey shows that about 70% of adult welfare recipients have low level literacy skill. Therefore, literacy

programs could reduce the unemployment rate, help adults get rid of poverty and achieve self-dependence, which also reduces the social costs.

The relationship between literacy and health status is also significant, since patients need more than basic level of literacy to carry out some basic tasks such as analyzing relative risks and benefits, calculating dosages and interpreting test results. According to the American Medical Association (1999), poor health literacy is a stronger predictor of a person's health than age, income, employment status, educational level and race. The results of the national literacy surveys demonstrate that adults with low literacy skills were more likely than those with higher literacy levels to have health problems. In addition, the economic impact of low health literacy is also estimated to be large.

Literacy can also reduce crimes. Noting the fact that 70% of prisoners scored in the lowest levels of literacy on the National Adult Literacy Survey, the National Institute for Literacy announced that quality education is one of the most effective means of crime prevention. Furthermore, literacy training can reduce the government expenditure on corrections. Based on a report from the U. S. Department of Justice, the average cost of incarceration per inmate per year in Virginia is \$22,942 in 2001. Therefore, literacy training could dramatically diminish the financial burden to the taxpayer by preventing people from committing crimes.

The RWALP can play an important role on the economy, health status and the reduction of crime in the Williamsburg community. The economic impact analysis has shown that the RWALP can improve the earnings of ESOL learners by 17.8%. Furthermore, extra health care costs and the cost of incarceration due to illiteracy in Williamsburg and James City are \$34,317,150 (range from \$15,197,595 to \$60,950,460) and \$38,559 (range from \$17,076 to

\$68484) per year respectively. Therefore, we can expect that the growing RWALP can positively impact the Williamsburg economy.

The case studies we have reviewed show us the best practices for adult based literacy programs in situations and communities similar to that of the RWALP. This study finds that the RWALP should over time implement the follow recommendations in order to improve on things such as learner retention, tutor training, learner tutor interaction, ESOL training, and community based initiatives.

In the field of tutor-learner interaction, we conclude the following: First, the program should require all tutors to interview learners about their backgrounds, goals, and educational experiences, as one strategy to enhance the tutor-learner relationships. Second, we recommend that the RWALP incorporate some kind of small group meetings into their program in addition to the one-on-one tutoring. Third, learners and tutors should be matched on their ability to relate with one another instead of solely on an availability basis. Fourth, the RWALP should incorporate the Terry Study recommendations listed above. Lastly, the program should implement additional follow-up training sessions to their tutor training in the future.

It is our recommendation that the RWALP continues its attempts to enhance partnerships with the community as a whole, and strive to expand partnerships with employers throughout Williamsburg. In addition, it would be beneficial to cultivate the program's close ties with local government. Additionally, to enhance the program's ESOL tutoring and to help with tutor recruitment and retention, we recommend that the program allows tutors who gain certification through the Virginia Adult Learning Resource Center to skip a portion of the 10 hours of training. This will allow tutors to gain certification that they can take with them after they leave the

program. Also, the program should work with the college to give course credit to student volunteers who complete additional training and tutoring in ESOL. This will be an incentive for students to work as tutors with the program.

By incorporating this report's recommendations into the RWALP's day-to-day practices and long term goals, the program can increase the economic impact it has in Williamsburg and improve their ability to serve their learners. However, the RWALP can be improved by considering the following suggestions: develop more thorough data collections for the program in order to allow for specific, targeted changes; increase relationships with local employers; and reevaluate the tutor training techniques and the training's effects on learners.

Overall, this analysis has found that the RWALP is helping improve the lives of its learners, by improving wages, increasing health literacy, and perhaps even decreasing crime and incarceration rates. Also, improving literacy is important to the Williamsburg community, since illiteracy is associated with high health costs and prison costs. As shown in the case studies and our data analysis, investment in adult literacy has a payoff for the individual learners and the community as a whole.

Table 5.1: Summary of Case Study Issues and Implications for the RWALP

Case Study Issue	Case Study Citation	Implications for the RWALP
Tutor-Learner Interaction	Hayes, 1996	Tutors should learn more about learners' backgrounds, experiences, and goals. Tutor training methods should be evaluated in order to maintain effective training.
Tutor-Learner Interaction	Terry, 2006	Learners should be made welcome in their tutoring environment and should be provided emotional support. Tutors should be trained.
Tutor-Learner Interaction	Belzer, 2006	Small group meetings should be incorporated.
Tutor-Learner Interaction	Sandman-Hurley, 2008	Learners and tutors should be matched according to their abilities to relate to each other.
Community Appropriate Techniques	Ziegler, 2008	Literacy programs such as RWALP should establish community partnerships.
ESOL Specific Techniques	Yang, 2005	RWALP should further develop their specialized curricula for ABE and ESOL learners.
ESOL Specific Techniques	Burt, 2005	RWALP should further develop specialized training for ESOL tutors.

Table 5.2: Economic Impact of Literacy Training at the RWALP for a Typical Year

Economic Impact on:	Estimated Private benefits (gains)	Estimated Social benefits (gains)
Earnings	RWALP improves the weekly earnings of ESOL learners by 17.8%.	<ol style="list-style-type: none"> 1. Quantitative literacy skills are a major factor raising the likelihood of full-time employment. 2. Adults in the lower literacy categories were far more likely than those in the higher levels to be in poverty and were far more likely to be on food stamps. 3. Literacy could help adults move out of poverty and achieve income independence. 4. The likelihood of being on welfare goes up as literacy levels go down.
Health Savings	The extra health care costs for a patient due to low health literacy is \$10,005 per year.	<ol style="list-style-type: none"> 1. Individuals who have better performance in document literacy have better overall health status. 2. Good health literacy can improve the efficiency of medication and reduce Medicare and Medicaid expenditures 3. Williamsburg/James City County spends approximately \$34,317,150 (range from \$15,197,595 to \$60,950,460) in additional health-related expenses per year due to low literacy.
Crime Costs	The additional cost of re-incarceration due to low literacy is approximately \$2,294 per inmate, per year	<ol style="list-style-type: none"> 1. Literacy could reduce re-incarceration rates by 10%. 2. Literacy programs have positive impact on prisoners' employment and earnings after release. 3. Literacy training could reduce the government expenditure on corrections. 4. Williamsburg/James City County spends approximately \$38,559 (range from \$17,076 to \$68,484) more in the cost of re-incarceration per year due to low literacy.

References

- Audrey, B. & Jessica, H.: "Correctional Education as a Crime Prevention Program." UCLA School of Public Policy and Social Research (2004)
- Barton, P. & Coley, R.: "Captive Learners: Education and Training in America's Prisons." Princeton, NJ: Educational Testing Service (1996)
- Barton, P. & Jenkins, L.: "Literacy and Dependence: The Literacy Skills of Welfare Recipients in the United States." Princeton, NJ: Educational Testing Service (1995)
- Beder, H.: "The Outcomes and Impacts of Adult Literacy Education in the United States." National Center for the Study of Adult Learning and Literacy (1999)
- Belzer, Alisa: "What are they doing in there? Case studies of volunteer tutors and adult literacy learners." *Journal of Adolescent & Adult Literacy*, Vol. 49, Issue 7 (Apr., 2006) pp. 560-572
- Burt, Miriam; Peyton, Joy; and Van Duzer, Carol: "How Should Adult ESL Reading Instruction Differ From ABE Reading Instruction?" Center for Adult English Language Acquisition (CAELA) Available at: http://www.cal.org/caela/esl_resources/briefs/readingdif.pdf (Mar., 2005)
- Business Wire: "New Report Estimates Cost of Low Health Literacy between \$106 - \$236 Billion Dollars Annually." (2007)
- Corcoran, M. & Loeb, S.: "Will Wages Grow with Experience for Welfare Mothers?" in *Focus*, Vol. 20, No. 2 (1999)
- Crandall, JoAnn; Sheppard, Ken: "Adult ESL and the Community College" Available at: <http://www.caalusa.org/eslreport.pdf> (Dec, 2004)

- Hayes, Elisabeth: "Learning about Adult Literacy: A Case Study of a College Tutor." *Journal of Adolescent & Adult Literacy*, Vol. 39, No. 5 (Feb., 1996), pp. 386-395
- Hull, K., et al., "Analysis of Recidivism Rates for Participants of the Academic/ Correctional/ Transition Programs Offered by the Virginia Department of Correctional Education." *Journal of Correctional Education*, Vol. 51, No. 2 (2000)
- Johnson, R. & J. Onwuegbuzie: "Mixed Methods Research: A Research Paradigm Whose Time Has Come." *Educational Researcher*, Vol. 33, No. 7, pp. 14-26 (2004)
- National Institute for Literacy: "Fact Sheet: Corrections Education." Washington, DC: National Institute for Literacy (2001)
- National Institute for Literacy: "Literacy, It's a Whole New World." (1998)
- Sandman-Hurley, Kelli: "Volunteers Tutoring Reading-Disabled Adult Literacy Learners: A Case Study." *Adult Basic Education & Literacy Journal*, Vol. 2 Issue 2 (Summer 2008) p94-103
- Steurer, S., Smith, L., & Tracy, A.: "The Three State Recidivism Study." *Correctional Education Association* (2001)
- Terry, Marion: "The Importance of Interpersonal Relations in Adult Literacy Programs." *Educational Research Quarterly*, Vol. 30 Issue 2 (Dec., 2006), pp. 30-43
- U.S. Department of Health and Human Services: "Understanding and Improving Health." Available at: <http://www.healthypeople.gov/Document/pdf/uih/2010uih.pdf> (Nov., 2000)
- Weiss, B.: "Hidden problems: low literacy." *20 Common Problems in Primary Care*, New York, McGraw-Hill Book Company (1999)

Yang, Yi: "Teaching Adult ESL Learners." The Internet TESL Journal, Vol. XI, No. 3 (Mar., 2005) Available at: <http://iteslj.org/Techniques/Yang-AdultLearners.html>

Ziegler, Mary and Davis, Dent: "Rural adult literacy in a community context: From the margin to the mainstream." New Directions for Adult & Continuing Education, Issue 117 (Spring 2008) pp 25-35