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ABSTRACT

A survey group of the State Literacy Workforce Development Council studied the impact of illiteracy on Alabama's work force and economy using census data. Findings indicated that 55 percent of Alabama's adults functioned at literacy levels inadequate to meet the demands of a modern, technical society. Costs to business and industry were lost productivity, high employee turnover rates, wastage, and absenteeism associated with inadequate basic skills among workers. Other findings were as follows: the contribution of illiteracy to poverty, the effects of which cost the taxpayers at least $495 million per year in Aid to Families with Dependent Children and food stamp costs and the link between illiteracy and crime, with the support of over 20,000 prisoners costing over $200 million per year--rising by 1,000 prisoners each year. The literacy level of Alabama's workers affected the state's ability to retain existing business and industry and attract new business and industry. Social costs associated with low worker literacy levels included some social conditions associated with poverty such as the following: low birth weight babies, high infant mortality, child death, high teen violent death rates, large numbers of high school dropouts, high rates of teen pregnancy, and crime. The survey group identified the following needs that, if met, would have a positive and significant impact on the state's economy and future: a high school credential; basic literacy and computational skills; and effective work attitudes. (YLB)

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WORKFORCE ILLITERACY IN ALABAMA: REPORT OF THE SURVEY GROUP

HERBERT R. HORNE, JR.
and members of the Survey Group

State Literacy Workforce Development Council

Extracted from the State Literacy Workforce Development Council report, as presented to the Governor, Lt. Governor, State Board of Education and State Legislature in January, 1997.

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WORKFORCE ILLITERACY IN ALABAMA: REPORT OF THE SURVEY GROUP

HERBERT R. HORNE, JR., and Others

State Literacy Workforce Development Council

BACKGROUND: On February 12, 1996, Alabama Governor Fob James, Jr., signed Executive Order 15, creating the State Literacy Workforce Development Council to address the impact of illiteracy on Alabama's workforce and economy and to make recommendations on how to address the problem. This bipartisan Council was the result of joint efforts between Governor James and Lt. Governor Don Siegelman; it included over 150 members. Within the Problem Identification Team (chaired by Ms Becky Dunn Arnoff) the Survey Group was charged with providing the Team information and/or data identifying (1) the extent and scope of Alabama's illiteracy problem in economic and cultural terms; (2) the cost of illiteracy to the state; and (3) the literacy skills needed by Alabamians in order to positively and significantly impact the state's economy and its culture. The Survey Group was led by Problem Identification Team Vice-Chair Dr. Rick Horne and Mr. O.J. Webster, Recorder. Members of the Survey Group included Mr. James E. America, Ms Jane Burk, Mr. Ed Castille, Ms Amy Herring, Mr. Robert Hickman, Dr. Charles Lang, Ms Angelis Smith, Dr. Judy Snyder, Ms Peggy D. Walker, and Ms Linda House West. This document is the report of the Survey Group extracted from the full report presented to the Governor, Lt. Governor, State Board of Education and Legislature in January, 1997.

SYNOPSIS: The Survey Group identified a target population of 1,427,448 Alabamians. Costs to business and industry included lost productivity, high employee turnover rates, wastage, and absenteeism associated with inadequate basic skills among workers. The literacy level of Alabama's workers was postulated to affect the state's ability to retain existing business and industry and attract new business and industry. Social costs associated with low worker literacy levels included some social conditions associated with poverty, i.e., low birth weight babies, high infant mortality, child death, high teen violent death rates, large numbers of high school dropouts, high rates of teen pregnancy and crime. The Survey Group identified needs which, if met, would positively and significantly impact the state's economy and its future. These include: (a) a high school credential, (b) basic literacy and computational skills, and (c) effective work attitudes. The Survey Group recommended additional research to: (a) document and quantify the effect of worker education programs on productivity among Alabama's businesses and industries; (b) document and quantify the outcome of corrections education programs in terms of recidivism and ability of released inmates to find and hold employment; (c) more accurately determine the impact of perception of worker literacy on companies considering relocating to or opening businesses in Alabama; (d) document and quantify the effect of education on welfare recipients in terms of ability to break the welfare cycle; and (e) explore the relationship between education and work attitudes, and determine which attitudes/behaviors can be taught and the most effective methods for teaching.

REPORT

State Literacy Workforce Development Council
Problem Identification Team
Survey Group

Charge: The Survey Group was charged with providing the Group information and/or data identifying (a) the extent and scope of Alabama's illiteracy problem in economic and cultural terms; (b) the cost of illiteracy to the state; and (c) the literacy skills needed by Alabamians in order to positively and significantly impact the state's economy and its culture.

Description of process: A series of meetings of the Survey Group was held to assemble, collate and interpret the information and data pertinent to the charge. The minutes of those meetings are attached. In the initial meeting, a consensus was reached that the data and information necessary to address the Group's charge existed in the form of earlier surveys, research reports, and data held by various state organizations. The Group began by identifying the types of data and specific data elements which would be needed to prepare the report. Responsibilities for specific data were assigned among Group members, and these members were asked to gather the data and bring it to the second meeting. In the second meeting, the information which had been gathered was reviewed, and additional data collection assignments were made. Group members reviewed the efforts to that point, reviewed the original charge of the Group, and reached a general consensus that the efforts were on track and congruent with the intent of the charge. In the third meeting, additional data was brought to the Group by the members and discussed. Progress in terms of the charge and timelines were discussed; members agreed on both the direction of efforts and process. A conceptual draft was distributed among the Group members present and mailed to the members who were absent. Consensus was reached that the conceptual draft illustrated an acceptable direction for the product and provided a framework for the three specific charges of the Group. Additional inputs required from Group members and other agencies were identified and assigned among the Group members. A second draft was provided to the Group members at the fourth meeting. This draft was reviewed at the fourth meeting; the group reached consensus on several changes required, and a draft was approved for presentation to the Problem Identification Team. Copies of the draft were forwarded to Group members who were not present, and their comments were included in the final draft.

Findings

1: Identify the extent and scope of Alabama's illiteracy problem in economic and cultural Terms.

One Alabamian in three lacks a high school education; one in five has completed no high school at all[1]. At the time of the latest census Alabama had 4,040,587 people. Of these, 597,455 (20%) had not completed high school but had more than a 9th grade education. Another 362,434 (12%) Alabamians over 18 years of age had completed less than a 9th grade education[2]. These figures are alarming, but they do not reflect the full extent of Alabama's illiteracy problems because many individuals (a) function at a lower level than indicated by their educational completion or (b) may have misled the census takers or failed to understand the question being asked.

Many people have heard stories of high school graduates who couldn't read or write simple sentences. We can get a feeling for the number of people with high school credentials who lack high school level skills by looking at the number of people who have completed high school and applied for entrance into our state's junior, community and technical colleges, yet lacked the basic skills necessary for participation in postsecondary education. In the fall term of 1995-96, 19,535 students in postsecondary institutions were classified as academically disadvantaged. This is 25% of a population of 77,353[3].

There is a large volume of research and opinion reported in educational and business journals regarding a deficit between the educational skills of America's workers and the needs of business and industry. Carnevale, Gainer and Meltzer[4] in a joint American Society for Training and Development (ASTD) and U.S. Department of Labor Publication noted the shortage of workers with sufficient basic skills needed to acquire the sophisticated technical skills required in technologically advancing workplaces. Deficiencies in basic skills were held to "threaten adaptation and short-circuit successful job transitions and career growth" (p. ii). Learning to learn was found to be the foundation of the workplace basics with the competencies of reading, writing, math, communications, creative thinking and problem solving as the framework to be built on this foundation. In a 1991 research project sponsored by the U.S. Office of Educational Research and Improvement, Cappelli[5] found production jobs to have highly significant increases in the level of basic skills required. The increasing demands of technology

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[1] U.S. Census, 1990
[2] Remington, W.C. Statistical Atlas of Alabama (Undated) University of Alabama Geography Department
[3] Integrated Postsecondary Education Data System (IPEDS), Fall Enrollment, 1985-1995
[4] Carnevale, A., Gainer, L., & Meltzer, A. (1988). Workplace basics: The skills employers want. Alexandria, VA: The American Society for Training and Development and the U.S. Department of Labor, Employment and Training Administration
[5] Cappelli, P. (1992). Are skill requirements rising? Evidence from production and clerical jobs (R117Q00011-91) Philadelphia: National Center on the Educational Quality of the Workforce.

were noted by Kerka[6], who pointed out the dichotomy between the increasingly technical workplace and the demographic groups now entering the workforce. In a publication by the National Center on the Educational Quality of the Workforce, Stephen Barley surmises that technological change has been the most important force in the growth of the professional and technical workforce which, along with clerical workers, is the fastest growing category of the labor force[7].

The Bottom Line: Basic Skills in the Workplace[8] reported on the need for better educated workers. Emphasis on school improvement was rejected as an adequate means of meeting the needs of the workplace; the need to improve the skills of undereducated workers currently in the job market was emphasized. In The Bottom Line: Basic Skills in the Workplace, the authors concluded that individuals presently of workforce age would comprise three quarters of the total workforce for the next 15 years; therefore, the needs of the workplace could not be met through the schools. The American Society for Training and Development and the Department of Labor collaborated on a publication by Carnevale and Gainer (1989), The Learning Enterprise[9]. This report of research conducted during a two year joint ASTD and Department of Labor project addressed changing job skill requirements and the provision or access to training required to support the changing requirements. "A job is the price of admission to this individualistic culture and participatory political system. Persons unable to get work disappear from the community, drop out of the political system, and fall into the underground economy"[10].

Beyond the school doors: The Literacy Needs of Job Seekers Served by the U.S. Department of Labor [11] reported the result of a study commissioned by the U.S. Department of Labor and conducted by the Educational Testing Service. In this study the literacy skills of participants in programs funded under the Job Training Partnership Act and Employment Service/Unemployment Insurance. Literacy was defined as "...using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential" (p. 3). The results indicated individuals with higher levels of literacy skills tended to have better jobs, earn higher wages and better avoid periods of unemployment when compared to individuals with lower levels of literacy skills.

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[6] Kerka, S. (1994) Life and Work in a Technological Society. (ERIC Digest No. 147). Columbus, OH: Center on Education and Training For Employment. (EDO-CE-94-147).

[7] Barley, S.R. (1992) The new crafts: The rise of the technical labor force and its implication for the organization of work. School of Industrial and Labor Relations, Cornell University.

[8] U. S. Department of Labor/U. S. Department of Education. (1988) The bottom line: Basic skills in the workplace. Washington DC: U.S. Government Printing Office.

[9] Carnevale, A., & Gainer, L. (1989). The learning Enterprise. Alexandria, VA: The American Society for Training and Development and the U.S. Department of Labor, Employment and Training Administration

[10] Carnevale, A., & Gainer, L. (1989). The learning enterprise. Alexandria, VA: The American Society for Training and Development and the U.S. Department of Labor, Employment and Training Administration. p. 50

[11] Kirsh, I., Jungeblut, A., & Campbell, A. (1992). Beyond the school doors: the literacy needs of job seekers served by the U.S. Department of Labor. Princeton NJ: Educational Testing Service and the U.S.

The Secretary's Commission on Achieving Necessary Skills (SCANS) was formed under the Secretary of Labor in 1989. This group of representatives from business, labor, education and government produced a report in July 1992, Learning a Living: A Blueprint for High Performance (SCANS, 1993). According to the 1993 continuation report, Teaching the SCANS Competencies[12] the SCANS competencies defined "the know-how American students and workers need for workplace success" (p. 5). SCANS identified both competencies and foundation skills. Competencies dealt with productive use of resources, interpersonal skills, information, systems and technology. Foundation skills included (a) basic skills such as reading, writing, arithmetic and mathematics and speaking and listening, (b) thinking skills such as creative thinking, decision making, problem solving, reasoning and learning to learn and (c) personal qualities such as acceptance of individual responsibility, self esteem, sociability, integrity and self management.

One of the Survey Group's first tasks was to define illiteracy.

Experts agree that there is no single definition of illiteracy. Instead, there are a number of different definitions of illiteracy ranging from (a) total inability to recognize the printed word or numbers to (b) functioning at a level lower than two years beyond the level of high school completion. The National Adult Literacy Survey defined literacy as ". . .using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential"[13] For the purpose of this survey, illiteracy was defined as the inability to (a) read and comprehend and (b) perform simple mathematical operations necessary to secure and retain entry level employment or to qualify for training for entry level employment.

For this survey, Illiteracy was *initially* defined as the inability to (a) read and comprehend and (b) perform simple mathematical operations necessary to secure and retain entry level employment or to qualify for training for entry level employment. *This definition was later amended.*

We used the term "employability illiteracy" to describe the level of literacy below which the chance of gaining and retaining employment is seriously diminished. Alabama Industrial Development Training (AIDT) screens applicants for training before entering them into training. A qualified applicant would have a high school credential and reading and mathematics skills corresponding to around the eighth grade level--about ten applicants must be screened for each applicant who is accepted. Once the applicants have been screened, there is a 90 to 95% completion rate for training. Research supports the contention that while years of schooling completed is an

[12] Secretary's Commission on Achieving Necessary Skills (SCANS). (1993). Teaching the SCANS competencies. Washington DC: U.S. Government Printing Office.

[13] Kirsch, I., Jungeblut, A., Jenkins, L., & Kolstad, A. (1993). Findings From the 1992 National Adult Literacy Survey. Washington: National Center for Educational Statistics

inadequate measure of literacy, the problem of defining illiteracy in terms of specific deficiencies or knowledges in the context of employability is complicated by the fact that there currently exist no across-the-board measures of employee literacy skills in a recognizable and interpretable form which can be used as we use "years of school completed."[14]

Employability Illiteracy: the level of literacy below which the chance of gaining and retaining employment or entering training for employment is seriously diminished. In most cases, this point is a performance level roughly equivalent to mastery of reading and mathematics through the seventh grade level in the Alabama course of study. This is NOT saying completing the seventh grade is sufficient. It is saying that mastery through the seventh grade is essential.

A statewide study of the highway construction industry found this to be roughly equivalent to mastery of reading and mathematics through the seventh grade level in the Alabama Course of Study[15]. The Highway Construction Study is very relevant to employability--in a listing of the top 34 high demand jobs in Alabama in 1996[16], 26 were associated with the Highway Construction Industry and were addressed in the study. Alabama Industrial Development Training (AIDT) records indicate a similar minimum level of competency in mathematics and reading for successful training[17]. There are also national studies such as the National Adult Literacy Survey (NALS)[18], the findings of which lend support to this definition. In interpreting the NALS, the US Department of Education[19] noted that of the 5 levels, Level 1 persons were very limited in processing information, having great difficulty in accomplishing routine tasks such as totaling an entry on a deposit slip or identifying specific information in a newspaper article. Level 2 persons had very limited skills, experiencing difficulty with such things as calculating the total cost of a purchase. Mastery of the Alabama Course of Study through the seventh grade would include mastery of reading and quantitative skills sufficient to score above Level 2 on the NALS. The following table illustrates the problems inherent in equating grade level completed with functional performance.

Table 1: Grade level versus functional performance[i]

Performance Level	Less than 8 years Ed	8-12 years Ed	High School Diploma
Level 1	35%	27%	21%
Level 2	7%	19%	36%

[14] S.E.Berryman (1994), The Role of Literacy in the Wealth of Individuals and Nations, NCAL Technical Report TR94-13, September, 1994.
[15] Horne, H. and Selman, J. (1992) Entry Level Requirements for the Highway Construction Industry, , Aubum University.
[16] State Employment Service Data furnished to the Survey Group, September, 1996
[17] Alabama Industrial Development Training records as provided to the Survey Group by the AIDT representative, Mr. Ed Castille.
[18] Kirsch, I., Jungeblut, A., Jenkins, L., & Kolstad, A. (1993). Findings From the 1992 National Adult Literacy Survey. Washington: National Center for Educational Statistics
[19] Pugsley, R.S. (1996)US Department of Education, Office of Vocational and Adult Education, Program Memorandum FY 96-13

It is significant that the NALS found that 21% of the people who function at the lowest level (1) and 36% of those who function at Level 2 have a high school diploma.

The US Department of Education has projected the percentages of the population we could expect to be performing at Level 1 and Level 2 on a state-by-state basis. In Alabama, the projections by congressional district are as follows.

Table 2: Performance Level Projections by Congressional District[ii]

District	Percentage of Level 1	Percentage of Level 2
1	27	58
2	26	58
3	28	61
4	28	57
5	22	49
6	15	40
7	42	28
STATEWIDE	21	34

According to these projections, 55% of Alabama's population (55% of 2,980,586 Alabamians 18 and over = 1,639,322) would fall into NALS Level 1 or 2. There are some additional statistics which go along with the NALS which directly impact the economic condition of the state. For example, 44% of NALS Level 1 persons live in poverty; 23% of Level 2 live in poverty. Fifty percent of Level 1 are out of the labor force and 33% of Level 2 are out of the labor force. Median weekly income (nationally) for Level 1 is $240, and an average of 18 to 19 weeks are worked per year. Median weekly income (nationally) for Level 2 is $281, and an average of 27 weeks are worked per year.

The US Department of Education also published figures on the adult education target population (defined by having less than a high school diploma, not functional level) which show the distribution of this population by age.

Table 3: Number in Adult Education Target Population by Level of Education[iii]

	Number in Target Population				
Level of Education	total	age 16-24	age 25-44	age 45-59	age 60 & up
0 to 4 years	92,890	2,571	10,324	13,707	66,288
5 to 8 years	272,572	13,260	39,591	56,058	163,663
9 to 12 years	565,718	76,009	190,451	125,407	173,851
Total target population	931,180	91,840	240,366	195,172	403,802

As we noted, the NALS defines literacy in terms of function. The US Department of education has tended to define literacy in terms of level of education completed. This is an easier level to determine and while it has been shown that the level of education completed doesn't necessarily equate to functional level, the level completed can be used in determining the need for credentialing. The definition of illiteracy for

employability cannot stop with a functional level. Credentialing--high school diploma or GED--is an important corollary to literacy. Regardless of functional level, according to both the Alabama State Employment Service and Alabama Industrial Development Training, today's higher technology employers are looking for a high school credential as a criterion for consideration for the better paying jobs. This trend is expected to continue. The Alabama Department of Industrial Relations predicts that in the year 2005, approximately 2.3 million workers will be employed in Alabama. Of these, about 1.2 million will be "white collar" workers, .7 million will be "blue collar", .4 million will be service and about .06 million will be in agricultural related jobs[20]. All of these job areas are seeing significant "upskilling." As skill level requirements increase, Alabama will need to increase the skill levels of its entry level workers accordingly or risk being left behind.

Therefore, our definition of illiteracy needed to be expanded as follows: Employability illiteracy is the inability to (a) read and comprehend and (b) perform simple mathematical operations necessary to secure and retain entry level employment or to qualify for training for entry level employment (equivalent to mastery of the Alabama Course of Study through the seventh grade level) and lacking a high school credential.

After defining illiteracy, the task for the Survey Group was to determine the number of "illiterate" Alabamians. From 1990 census data, we know **over 950,000 Alabamians 18 years of age or older lack a high school credential**--approximately one in three. Since 1990, the number of persons who lack a credential has been swelling by over 10,000 dropouts per year from public schools, while fewer than 8,000 persons per year have completed the GED[21], Because the number of people receiving a GED includes individuals who were not counted among the dropouts--youth who were "home schooled" or enrolled in non-accredited programs--fewer dropouts are receiving GEDs than the number of GEDs issued would indicate.

The literacy level of persons who did not complete school cannot be determined by the grade level completed. During the State Department of Education Adult Education Curriculum Pilot Project[22] in 1992-93, participants in adult education were administered the TABE test under controlled conditions. In a representative 245 case sample, the correlation between highest grade completed and grade level at which the individual performed was only .02. If the grade level completed and the grade level performed were equal, the correlation would have been 1.0. In the 245 case sample, 76 (31%) of the 245 scored higher than grade completed; 166 (68%) scored lower than grade completed. Of the participants who had completed the eighth grade or less,

[20] Alabama Occupational Trends for 2005 (1996), Alabama Department of Industrial Relations, Research and Statistics Division.
[21] Alabama State Department of Education data.
[22] Curriculum Pilot Project Data, Alabama State Department of Education, Adult Education Program, 1992-93.

there was a weak negative correlation (-.012) between years of school completed and performance grade.

The AIDT experience and the results of the Highway Construction Industry survey pointed out that the literacy threshold for employment seems to be at about mastery of the seventh grade, or, stated another way, at least at the eighth grade level. Of the sample of 245 learners in the Curriculum Pilot Project, 127 (51.8%) scored at or above the eighth grade level in reading. Among this group of 127 learners who scored at or above the eighth grade level in reading, 106 were also tested in math. Of the 106 tested in math, 41 or 38.7% were below the eighth grade level in math. We would expect to find only 78 (31.8%) of the 245 participants who scored at or above the eighth grade in both reading and math. However, 233 of the 245 had completed the eighth grade. There are several points we can derive from the Curriculum Project and Highway Construction Industry study references: (a) There is little relationship between grade level completed and grade level at which the individual is performing, but in those studies about two thirds of the participants were performing at or below the grade level they have completed; (b) among non high school graduates participating in adult education programs, we would expect fewer than one third to be functioning at or above the eighth grade level in both reading and math regardless of grade level completed.

The figures from the NALS projections predict **at least 55% (1,639,322) of adult Alabamians are in the lowest literacy levels and would likely be below the "eighth grade" threshold in functional literacy.** The US Department of Education target population for Adult Education includes 931,180 persons with less than a high school credential. The population of individuals who are performing at the lower literacy levels therefore includes some individuals with high school credentials. These low-performing individuals would likely need additional education to find and keep a good job regardless of the fact that they already have a credential. The value of various high school credentials is beyond the scope of this study; but, it is obvious that there is great variability in the quality and quantity of education deemed necessary for a diploma.

As earlier stated, a number of individuals who were counted by the Census as having a high school credential lack the skills normally associated with such a certificate. Some graduated from non-accredited institutions. Some graduated prior to an exit exam. Some "graduated" with a certificate of completion rather than a diploma. Some graduated but simply lack the skills implied by the diploma. There is little hard data on the number of persons in Alabama who have a credential but who are lacking the functional literacy skills. The NALS found that 21% of persons scoring at Level 1 and 36% of those scoring at level two had a high school credential. If those national figures hold in Alabama, we could expect 131,444 Alabamians with a high school credential to be functioning at Level 1 and 364,824 Alabamians with a high school diploma to be functioning at Level 2. This is illustrated in Table 4 on the following page.

Table 4: Projected Number of Alabamians with a high school diploma functioning at NALS Level 1 or Level 2[iv]

total population over 18 = 2,980,586	% at Level 1	# at Lvl 1	% at Lvl 1 w HS Diploma	# at Lvl 1 w HS Diploma
	21%	625,923	21%	**131,444**
	% at Level 2	# at Lvl 2	% at Lvl 2 w HS Diploma	# at Lvl 2 w HS Diploma
	34%	1,013,399	36%	**364,824**

If we add the number of Alabamians lacking a high school credential (931,180 according to the US Department of Education Target Population Estimates) to the number of people who have a high school credential but who are predicted to be functioning at the lowest 2 NALS levels (131,444 + 364,824), we come up with a target population of people requiring educational services for employability (employability illiterate) of 1,427,448.

The number of employability illiterate Alabamians is estimated at 1,427,448.

There are several caveats. Some of the people who make up this employability illiterate target population are already working and can hold their present job for the foreseeable future without further education. Others are not in the work force and have no intention of entering the workforce. However, current trends are moving toward upskilling many jobs and should these individuals need to seek employment, they would most likely need educational assistance to locate and retain employment. One point which needs to be made, the term "illiteracy" has a number of negative connotations. People do not like to be called illiterate, even if by some standards they are. The NALS found most people, even those performing at levels 1 and 2, did not consider themselves illiterate and did not perceive themselves to be educationally at risk. A term more neutral than illiterate needs to be used if people are expected to voluntarily participate in programs to eradicate illiteracy. Terms such as "pre-employment training" or "employability enhancement" might be more neutral than words having to do with "illiteracy," "literacy training" or "basic education."

2. Identify the cost of illiteracy to the state.

Illiteracy costs the state greatly in both unemployment and underemployment. For each person unable to find gainful employment because of inadequate basic skills, the state's economy loses that worker's income, the taxes that worker would have paid, and the money the worker would have spent and returned to the economy. The state also may lose the cost of social programs to support the worker's and his/her family during periods of unemployment. When people aren't working or are working for too little money, there is fallout in terms of increased poverty and the social ills which accompany poverty: increased crime, substance abuse, family violence and child

abuse. The physical and mental health of the un- or underemployed population declines, the economy suffers, and welfare and social program costs increase. An accurate dollar value cannot be placed on the contribution of inadequate education to these problems, but there is some data which supports the contention that the cost is great.

The research data from the NALS suggests that a high percentage of persons in the lower levels of literacy (1 & 2) are much more likely to live in poverty than individuals at higher literacy levels, are unemployed more often and for longer duration than persons at higher literacy levels, and when they work, are likely to work for much less than their more literate counterparts. This is substantiated by local data. In the period from July 1, 1995, to June 30, 1996, a total of 414,178 people applied to the Employment service for assistance in finding jobs. Of these, 93,277 lacked a high school credential; another 324,739 had a high school diploma or GED. The Employment Service reports that of the over 93,000 job seekers who lacked a high school credential in 1995-96, only 23.67% entered employment;[23].

The statistics which show persons at the lower two levels of the NALS average between 18 to 27 weeks of work per year are especially meaningful when we look at wages and the poverty level. According to the 1996 federal poverty guidelines, the poverty threshold for a single unit family is $7,740. When the individual works full time (paid for 52 weeks per year) they would need to make only $3.72 per hour to be above the poverty threshold. However, when that individual works 27 weeks per year, he or she would need to make $7.16 per hour to be above the poverty line. Drop the weeks worked to 18, and the hourly threshold becomes $10.75. The following table illustrates the hourly wage needed to be at the poverty threshold for various family sizes and weeks worked.

Table 5: Hourly wage needed to be at the poverty threshold for selected periods of employment[v]

Family Size	Poverty Threshold	Hourly earnings needed to meet threshold, **52** weeks annual employment	Hourly earnings needed to meet threshold, **27** weeks annual employment	Hourly earnings needed to meet threshold, **18** weeks annual employment
1	$7,740	$3.72	$7.17	$10.75
2	$10,360	$4.98	$9.59	$14.39
3	$12,980	$6.24	$12.02	$18.03
4	$15,600	$7.50	$14.44	$21.67

The State Employment Service has provided us with data on the jobs which have the most vacancies currently available and average hourly wages for those jobs. The following table shows the average salary for a year with 52 weeks pay, 27 weeks pay

[23] Alabama State Employment Service Data, 1995-96

and 17 weeks pay. When the poverty guidelines for a family of three are applied, it becomes apparent that most of the jobs will keep a family of three above the poverty threshold only if the employee works for the entire year. When incomes are computed using the average number of weeks employed for NALS Level 1 (17-18) and 2 (27) workers, the most of the incomes are well below the poverty threshold of $12,980. Figures shown in bold print are below the poverty threshold for a family of three.

Table 6: Income versus poverty threshold for "most available" jobs[vi]

Poverty Threshold, Family of 3 $12,980	Hourly wage	Work 52 weeks	Work 27 weeks	Work 17 weeks
Carpenters	$8.52	$17,721.60	**$9,201.60**	**$6,134.40**
Concrete Finishers	$7.87	$16,369.60	**$8,499.60**	**$5,666.40**
Ironworkers (structural)	$10.82	$22,505.60	**$11,685.60**	**$7,790.40**
Ironworkers (reinforcing	$9.33	$19,406.40	**$10,076.40**	**$6,717.60**
Laborers				
asphalt rakers	$6.48	$13,478.40	**$6,998.40**	**$4,665.60**
concrete laborers	$6.38	$13,270.40	**$6,890.40**	**$4,593.60**
pipelayers	$6.20	**$12,896.00**	**$6,696.00**	**$4,464.00**
saw operators	$7.61	$15,828.80	**$8,218.80**	**$5,479.20**
side rail or form setters	$6.90	$14,352.00	**$7,452.00**	**$4,968.00**
unskilled	$4.96	**$10,316.80**	**$5,356.80**	**$3,571.20**
Power Equipment Operators				
aggregate spreaders	$7.50	$15,600.00	**$8,100.00**	**$5,400.00**
asphalt distributors	$6.75	$14,040.00	**$7,290.00**	**$4,860.00**
asphalt spreaders	$7.66	$15,932.80	**$8,272.80**	**$5,515.20**
backhoes, clamshells, draglines & shovels	$8.16	$16,972.80	**$8,812.80**	**$5,875.20**
bulldozers	$8.40	$17,472.00	**$9,072.00**	**$6,048.00**
concrete saws	$8.61	$17,908.80	**$9,298.80**	**$6,199.20**
crane & derricks	$9.38	$19,510.40	**$10,130.40**	**$6,753.60**
front end loaders	$6.65	$13,832.00	**$7,182.00**	**$4,788.00**
mechanics	$9.74	$20,259.20	**$10,519.20**	**$7,012.80**
milling machines	$9.03	$18,782.40	**$9,752.40**	**$6,501.60**
motor graders & motor patrols	$8.66	$18,012.80	**$9,352.80**	**$6,235.20**
oilers & greasemen	$7.48	$15,558.40	**$8,078.40**	**$5,385.60**
rollers (self propelled)	$7.12	$14,809.60	**$7,689.60**	**$5,126.40**
rollers (self propelled on asphalt base & pavements)	$6.83	$14,206.40	**$7,376.40**	**$4,917.60**
roto mills	$7.75	$16,120.00	**$8,370.00**	**$5,580.00**
scrapers	$7.16	$14,892.80	**$7,732.80**	**$5,155.20**
striping machine	$7.39	$15,371.20	**$7,981.20**	**$5,320.80**
Tractors & Loaders				
80 HP or less	$7.40	$15,392.00	**$7,992.00**	**$5,328.00**
80 HP or more	$8.70	$18,096.00	**$9,396.00**	**$6,264.00**
Farm, rubber tired	$6.14	**$12,771.20**	**$6,631.20**	**$4,420.80**
Truck Drivers				
under 1 1/2 tons	$6.65	$13,832.00	**$7,182.00**	**$4,788.00**
single rear axle	$6.21	**$12,916.80**	**$6,706.80**	**$4,471.20**
multi rear axle	$5.92	**$12,313.60**	**$6,393.60**	**$4,262.40**

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Examining statistical data extracted from the 1990 US Census data from 1990, a county by county analysis screened for a correlation between the percentage of persons in each county who lacked a high school credential and the county poverty rate, child poverty rate, and unemployment rate. The correlations are as shown below in Table 7, and indicate a relationship in each area which indicates that as the percentage of people lacking a high school education goes up, unemployment, poverty and child poverty all go up.

Table 7: Correlation between county percentage without a high school diploma and selected statistics.[vii]

Correlation between county percentage without a high school diploma and:	
Unemployment Rate	.46518
Child Rate	.46837
Child Poverty Rate	.42581

According to the Kids Count Data Book[24], "*Nothing predicts bad outcomes for a kid more powerfully than growing up poor. Study after disenheartening study confirm the linked between living in poverty and suffering a host of lousy developmental, educational, and adult outcomes. Poor children are more likely to be sick and underweight as toddlers; they are less likely to be ready for kindergarten; they are more likely to fall behind as grade schoolers; they face a much higher prospect of dropping out of high school; they are more likely to become teen parents; they face far greater odds of being either a victim or a perpetrator of crime; and they are far less likely to be economically successful as adults.*"[25] Both the number and percentage of children being raised in poverty is growing. Between 1974 and 1994, the numbers of children living in poverty climbed from 10.2 million to over 15 million; the percentages of children living in poverty changed form 15.4 to almost 22% nationwide. On national indicators, Alabama is more than 20% worse than the state median in terms of percent of children living in poverty, low birth weight babies, infant mortality, child death rate, teen violent death rate, teen birth rate and percent of teens who are high school dropouts. Ten percent of Alabama's children live in extreme poverty--family income less than 50% of the poverty threshold. In Alabama, 26% of families are headed by a single parent. Alabama ranks among the five states with the worst rates in terms of low birth rate babies, infant mortality rate, child death rate, teen violent death rate and percentage of teen who are high school dropouts. Alabama is sixth worst in terms of teen birth rate. Approximately half of the children in Alabama are racial or ethnic minorities, and minorities make up a disproportionate share of the poor.[26] In 1994, there were 20,989 births to unmarried women in Alabama; of these, 70.4% were minority children[27].

[24] Annie E. Casey Foundation (1996) Kids Count Data Book: State Profiles of Child Well-Being
[25] Annie E. Casey Foundation (1996) Kids Count Data Book: State Profiles of Child Well-Being, p 5.
[26] Annie E. Casey Foundation (1996) Kids Count Data Book: State Profiles of Child Well-Being, pp 34-5
[27] Pregnancy Statistics, Alabama Vital Events, Volume 1 1994, (1994) Center for Health Statistics, Alabama Department of Public Health.

Illiteracy contributes to poverty; the cost of poverty is part of the cost of illiteracy. Alabama Department of Human Resource Statistics from April, 1996, showed 42,166 cases receiving payments as Aid to Families with Dependent Children (AFDC). The payments went to families for 78,836 children (2.48 children per case) and averaged $59.84 per child. Multiplying that out (78836*$58.84), a total of $4,717,546 was paid out in the month of April, 1996, in AFDC payments. If that rate remains constant, the annual cost for 1996 would be $56,610,105. In April, 1996, 507,160 persons received food stamps; of these, 226,318 persons were also receiving other public assistance. Average per recipient was $72.43. The total amount of food stamps issued in April was $36,735,022. If that rate remains constant, the annual cost in food stamps for 1996 will be $440,820,264.[28] The research is clear; an adequate basic education will not guarantee an individual will not live in poverty, **but** in this country, an adequate basic education appears to be necessary in most cases before an individual can lift themselves out of poverty or avoid poverty in the first place. Referring back to Table 6 which lists jobs which currently are "most available" in Alabama, most of the jobs on that list require some reading and computational skills, many require credentialing or licensing, special training, or a high school diploma. October 1, 1996, the minimum wage becomes $4.75 per hour (or around $700 per month). For each person who was on welfare and who can, through improved basic skills, find employment, not only would at least an additional $700 come into the economy each month, but we could expect to see some reduction in the welfare costs of AFDC and Food Stamps (depending on income, family size, etc.).

Lost productivity is another expense of illiteracy. In the past, the economic well being of America flowed from the ability of a well paid but largely unskilled workforce to mass produce goods; future prosperity will hinge on the application of scientific and technical knowledge, management of information, and provision of service[29]. These economic activities require higher basic skills than did most manufacturing, industrial and business activities in the past. There have been a number of studies linking lost productivity, high employee turnover rates, wastage, and absenteeism with inadequate basic skills among workers. Elizabeth Dole, who was then U.S. Secretary of Labor, in 1989 noted that workers lacking adequate skills were costing billions of dollars in reduced productivity, time lost, accidents, absenteeism, and poor quality products. Her point was that many existing and most new jobs require relatively high levels of reading, computation, communication, creative thinking and problem solving skills. She also linked inadequate basic skills to unemployment, requirement for public assistance, and social ills including alcoholism, substance abuse, and crime[30]. It is difficult to place a dollar value on the contribution a lack of education makes toward these social ills, but effective workplace education programs have been shown to result in improved productivity, lower turnover rates, less wastage, and better quality products. Estimates of the cost of illiteracy in the workplace go into the billions of

[28] Statistics (1996) State of Alabama Department of Human Resources, April, 1996.
[29] Cappelli, P. (1992) National Center on the Educational Quality of the Workforce, University of Pennsylvania
[30] Dole, E. (1989). America's competitive advantage: A skilled work force. Adult learning, 1(a), 12-14

dollars on a national basis. [31]. Studies have shown that about 10% of the changes in productivity in the United States can be linked to educational level of the workers[32]. As the workplace becomes more technological, the skill requirements will go up, increasing the impact of inadequate worker skills on productivity.

The literacy level of Alabama's workers affects the state's ability to attract new industry. Even the perception of low literacy levels among workers can negatively impact corporate decisions over whether to relocate into Alabama. There are many positive reasons for firms to relocate to Alabama: quality-of-life, work ethic, tax base, the nation's highest per-capita number of public postsecondary and higher education institutions, workforce training incentives; business incentives such as capital investment tax credit, and infra-structure grants. However, the distribution of employment skills is shifting toward jobs that have higher skill requirements. Employers are looking for workers who have the basic skills necessary to learn the new jobs. If our workers are perceived as lacking basic skills, we lose the opportunity to attract higher technology industries.

The literacy level of Alabama's workers can affect whether industries remain in Alabama or move to lower cost locations. We are losing industries today to locations with lower wages and taxes. Industries which chose to come to Alabama because we had a willing workforce (and lower wages/tax incentives) are finding themselves faced with the choice between (a) upgrading technologically, (b) moving to a place with still lower wages and lower taxes, and (c) losing competitiveness in an increasingly global economy. The literacy level of the workers is a consideration in the decision of whether to upgrade technology and remain in the state or retain existing technology and move to an area with lower wages. If our workforce does not have the basic skills to cope with the technological upgrade and the company wants to remain competitive, the company is left with few alternatives.

There are many magazine and newspaper articles talking about **the correlation between illiteracy and involvement in crime**. A look at current Department of Corrections statistics supports the connection. In September of 1996, there were around 21,500 adult inmates in Alabama's state correctional facilities. Approximately

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[31] Carnevale, A., Gainer, L., & Meltzer, A. (1988).Workplace basics: The skills employers want. Alexandria, VA: The American Society for Training and Development and the U.S. Department of Labor, Employment and Training Administration.(b) Carnevale, A., & Gainer, L. (1989). The learning enterprise. Alexandria, VA: The American Society for Training and Development and the U.S. Department of Labor, Employment and Training Administration. (c) Kirsh, I., Jungeblut, A., & Campbell, A. (1992). Beyond the school doors: the literacy needs of job seekers served by the U.S. Department of Labor. Princeton NJ: Educational Testing Service and the U.S. Department of Labor, Employment and Training Administration. (d) Secretary's Commission on Achieving Necessary Skills (SCANS). (1993). Teaching the SCANS competencies. Washington DC: U.S. Government Printing Office. (e) U. S. Department of Labor/U. S. Department of Education. (1988) The bottom line: Basic skills in the workplace. Washington DC: U.S. Government Printing Office.

[32] Crawford, D.L, Johnson, A.W., and Summers, A.A. (1995) Schools and Labor Market Outcomes, The University of Pennsylvania.

75% of these inmates did not graduate from high school. The average educational level was 10th grade--the average reading level was less than would be expected of a fifth grader. There were around 1,200 inmates who could read or write at all. The total prison population is rising by around 1000 inmates per year. These inmates will in most cases be back on the streets soon--the average time served is less than 4 years. Without an education there is little hope for meaningful employment. The recidivism rate is 32%. That means that about a third of the prisoners released each year will return to prison within three years. There are some signs that education can help. Personal testimonies from former felons often credit with education as the key that opened the door to a new life for them. An introductory study by J.F. Ingram Technical College indicated that inmates who participated in education and technical training which prepared the individual to find meaningful employment on release had a significantly lower recidivism rate than other inmates.[33] Department of Corrections data indicate 70% of all inmates lack a consistent employment history. Given their educational level and functional performance level, this is consistent with the findings of the NALS that individuals performing at the lower levels of literacy are unemployed more often and for longer periods than their more educated counterparts. If ability to find meaningful work has a positive influence on whether an inmate returns to prison as indicated by the J.F. Ingram study, ability to find meaningful work might also help keep individuals from engaging in the behavior which got them into prison. Crime has a cost to society and to the victim. Cost to victims is enormous. The cost to society includes many components. If we only look at the cost of incarceration, it costs around $9,400 per inmate per year--not including capital outlay or construction costs. Maintaining 21,500 inmates costs us $202,100,000 each year. That goes up by 1000 inmates or $9,400,000 each year. Many of these incarcerated persons left families outside; in many cases these families then lack a provider and are on welfare, thus increasing the hidden cost of incarceration.

3. Identify the literacy skills needed by Alabamians in order to positively and significantly impact the state's economy and its future.

Alabamians need a high school credential. This is a prerequisite for most of the better jobs currently available and will become more important in the future.

In addition to having a high school credential, Alabamians need the basic literacy and computational skills to allow them to learn a new job or learn new technology on their existing job. In most cases, this translates to performing at a level equivalent to mastery of the subject matter in the Alabama Course of Study through the completion of grade 7.

Higher-order thinking and problem solving skills and **computer and other technology-related skills** are also mentioned in the literature as corollary forms of

[33] Recidivism Study, J.F. Ingram Technical College

literacy[34]; however, because there is little consensus on what is sufficient, rather than trying to specify an illiteracy level for these forms of literacy, it is the recommendation of this group that these activities be included in basic literacy programs.

Workers need effective work attitudes.

Emerging data indicate that workers need effective work attitudes and that these attitudes are learned and can be taught. A consistent comment noted in conversations with employers was "The most important thing is that they (the workers) want to work--if they are willing to work and willing to learn, we can handle the rest." This should not be interpreted to mean that basic literacy skills were not important; the workers had already met the minimum skill requirements for employment to get to the point where the comments are made. Much of the literature on "quality of the workforce" emphasizes the need for good employee work attitudes and ethics. A 1983 study found that employers often listed "character" as the most important consideration in hiring. The Committee for Economic Development surveyed small employers and found the top priorities in applicants included responsibility, self-discipline, pride, teamwork and enthusiasm. An employer survey in 1989 found work attitude and behavior to the most common reason for rejecting otherwise qualified applicants; the most common reasons given for firing employees were absenteeism and inability to adapt to the work environment. A survey involving the National Association of Manufacturers found work attitude and behaviors the most common reason for rejecting applicants. A Louis Harris study for the Committee for Economic Development identified lack of dedication to work and lack of discipline in work habits as the primary shortcoming in most job applicants.[35] While the pattern for work habits is set early in life, good work behaviors and ethics are learned behaviors and can be taught. It would be appropriate to include work attitudes and ethics in education programs for workers. The State Employment Service currently offers a short program (2-4 hours) in work preparation. These are offered in all local offices.

[34] Office of Technology Assessment, U.S. Congress (1993). Adult Literacy and New Technologies. US Government Printing Office: Washington DC.
[35] Cappelli, P. (Undated) Is the "Skills Gap" really about attitudes. Working Paper, National Center on the Educational Quality of the Workforce, University of Pennsylvania.

RECOMMENDATIONS

Considering (a) the findings that 55% (over 1.4 million) of Alabama's adults function at literacy levels inadequate to meet the demands of a modern, technical society; (b) inadequate literacy levels among workers contributes to lost productivity, high employee turnover, wastage, and absenteeism; (c) the contribution of illiteracy to poverty, the effects of which are costing the taxpayers at least $495,000,000 per year in AFDC and Food Stamp costs alone; (d) the link between illiteracy and crime, with the support of over 20,000 prisoners costing over $200,000,000 per year--rising by 1000 prisoners each year; and (e) the inhibiting effect low worker literacy levels have on business and industry considering relocating to Alabama, after implementation of the recommendations of the Council, additional research will needed to:

- Document and quantify the effect of worker education programs on productivity among Alabama's businesses and industries.
- Document and quantify the outcome of corrections education programs in terms of recidivism and ability of released inmates to find and hold employment.
- More accurately determine the impact of perception of worker literacy on companies considering relocating to or opening businesses in Alabama.
- Document and quantify the effect of education on welfare recipients in terms of ability to break the welfare cycle.
- Explore the relationship between education and work attitudes, and determine which attitudes/behaviors can be taught and the most effective methods for teaching.

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[i] Table 1. Grade level versus functional performance
[ii] Table 2. Performance Level Projections by Congressional District
[iii] Table 3. Number in Adult Education Target Population by Level of Education
[iv] Table 4. Projected Number of Alabamians with a high school diploma functioning at NALS Level 1 or Level 2
[v] Table 5. Hourly wage needed to be at the poverty threshold for selected periods of employment
[vi] Table 6. Income versus poverty threshold for "most available" jobs
[vii] Table 7. Correlation between county percentage without a high school diploma and selected statistics.

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