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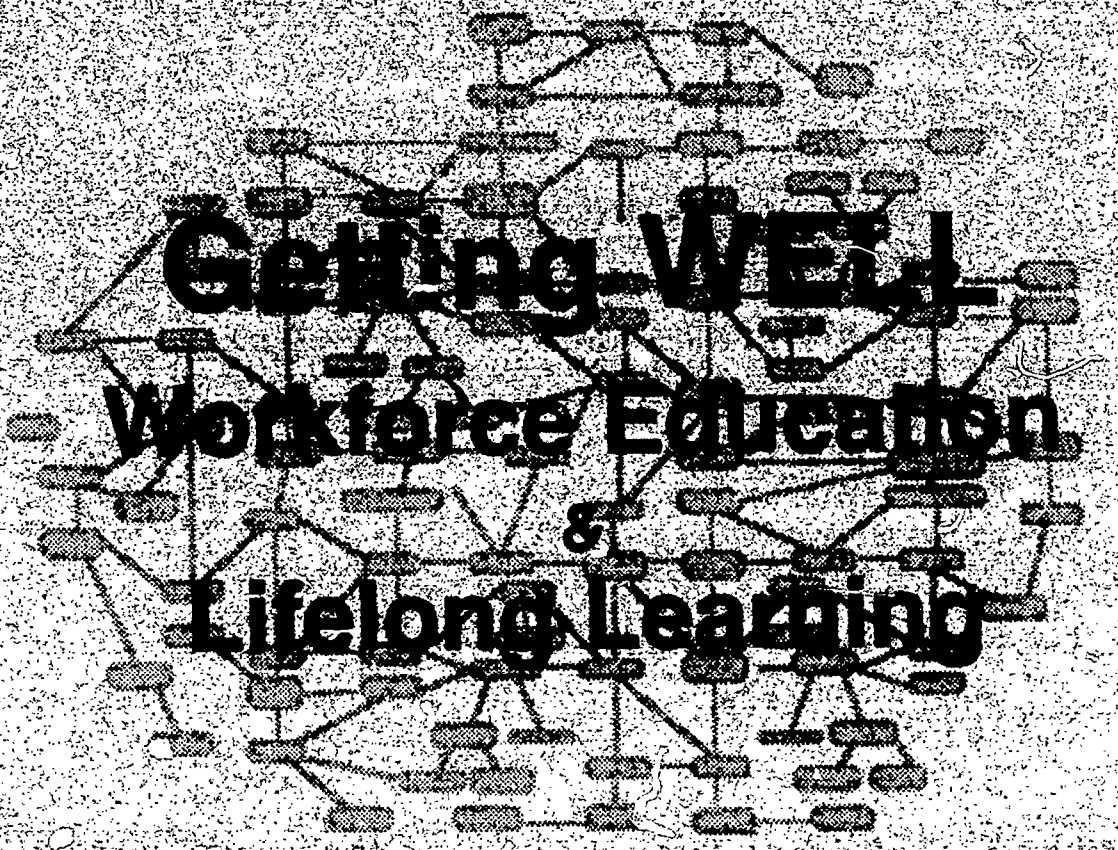
ABSTRACT

This report focuses on work force education and lifelong learning as a newly emerging strategy for meeting many challenges of education and work in the 21st century. Chapter 1 introduces the concept, reviews the sociopolitical background to the strategy, and presents the rationale for a new type of professional, Workforce Education and Lifelong Learning Specialists (WELLS). The concept of the WELL Action Research Center (ARC) is introduced as a means to provide a practicum setting for the education and training of WELLS and to develop research-validated knowledge. Chapter 2 develops the concept of a professional degree for educators and human resource professionals who wish to obtain advanced education and training as WELLS. It specifies the need for WELLS, indicates the growing opportunities for professional work as WELLS, and discusses the knowledge and skills that the WELLS curriculum should develop in three major domains: cognitive science foundations of education; educational arts and technology; and culture and human resources policies and practices. The chapter also discusses the role of college faculties in implementing the design for WELLS. Chapter 3 reviews the concept of "action research" and why it is an appropriate approach to both the training of WELLS and to the improvement of work force education and lifelong learning. This is followed by the current national scene in adult literacy research, a description of an ARC community to provide a context for the conduct of action research, and a tentative research agenda for the ARC. (YLB)

Final Report
April, 1992



Getting WEL: Workforce Education & Lifelong Learning

Designs for professional education and action research to improve the education and training of underserved youth and adults

Thomas G. Sticht
Barbara A. McDonald
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Applied Behavioral & Cognitive Science, Inc.

A report to The William and Flora Hewlett Foundation from The Applied Behavioral & Cognitive Sciences, Inc.

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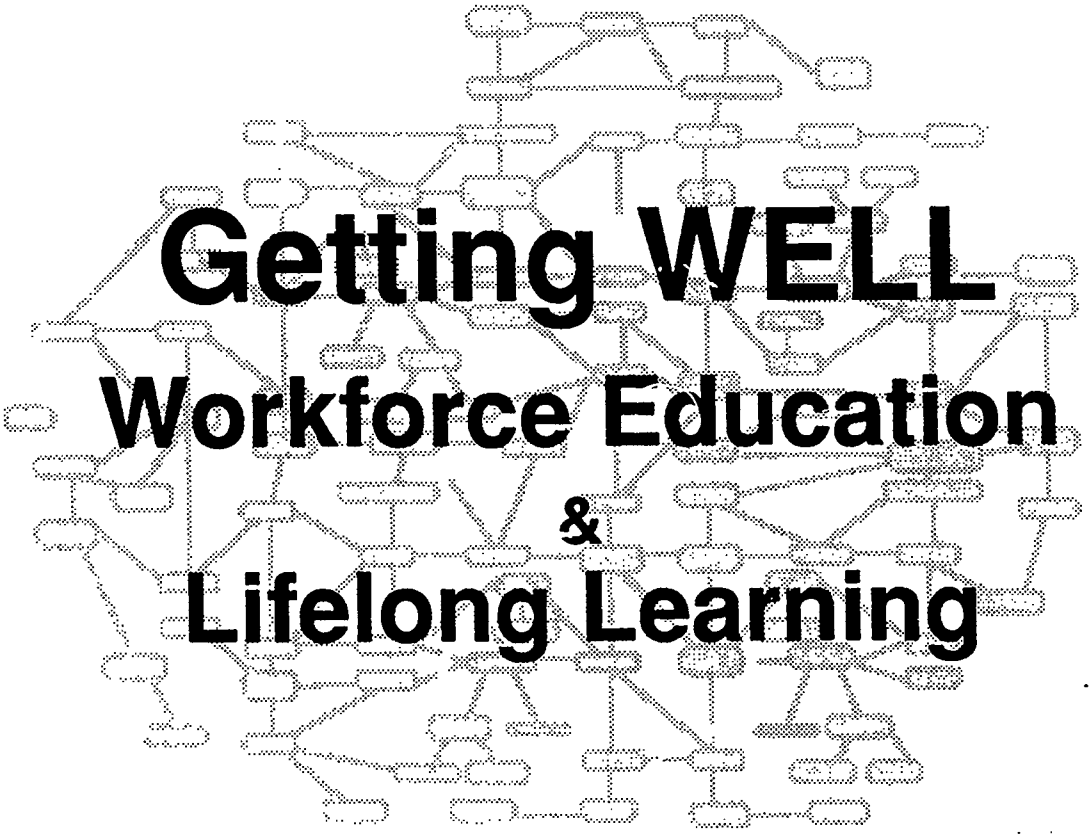

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Foreword

This report is concerned with that large segment of the youth and adult population who are not realizing the American Dream, who may not graduate from high school or, if they do, may not possess the highly developed skills necessary to achieve full participation in our society. Too many Americans are losing the opportunity to achieve high levels of self esteem that mastery of skills and responsible and rewarding work brings. For these individuals, sometimes called the "forgotten half," the lack of employability may stimulate a downward spiral, from a loss of self esteem and identity to a depression of learned helplessness. In other areas of life, too, self esteem and complex skills are just as important. It has been speculated by many that we are separating more and more into the haves and have nots as technology advances separate out society into people who can keep up and those who cannot. This report describes projects aimed at helping the have nots have.

The **Workforce Education and Lifelong Learning (WELL) Strategy** is introduced as a newly emerging strategy for meeting many of the the challenges of education and work in the 21st century. This report reviews the sociopolitical background to the strategy, and presents the rationale for a new professional, the **Workforce Education and Lifelong Learning Specialist (WELLS).**

The WELLS is professionally prepared to promote lifelong learning that emphasizes the development of attitudes, knowledge and skills for productive parenting, citizenship and work, with a focus on the education and training of youth and adults who are traditionally undereducated, non-college educated and who work in non-management jobs. The report establishes the need for a WELL Specialist and indicates the growing opportunities for professional work as a WELLS. It presents a design for a WELLS graduate degree program and discusses the knowledge and skills that the WELLS curriculum should develop in three major domains: the Cognitive Science Foundations of Education; Educational Arts and Technologies, and Cultural and Human Resources Policies and Practices. Finally, it discusses the role of college faculties in implementing the design for a WELLS.

To provide a practicum setting for the education and training of the WELLS, and to develop research-validated knowledge for the WELLS, the concept of the **WELL Action Research Center (ARC)** is introduced. A design is presented for an ARC that contributes to the professional development of the WELL Specialist while improving learning opportunities for youth and adults in a designated **ARC Community.** A broad action research agenda is proposed for the ARC to improve staff development services in youth and adult education, and to develop a "learning community" that can stimulate the personal and economic lives of those who make up the community.

Acknowledgments

A number of organizations and individuals contributed to the accomplishment of the work reported here. First and foremost, we are grateful to Dr. Roger Heynes and the William and Flora Hewlett Foundation for a grant to the Applied Behavioral & Cognitive Sciences, Inc. that made this work possible.

At the San Diego State University, College of Education, Dean Ann Morey convened a faculty team to participate in the design of the WELLS curriculum. This team was headed by Dr. Patrick Harrison, Chair of the Department of Educational Technology, and included Dr. Brockenbrough Allen and Dr. William Piland. Appreciation is gratefully extended to these faculty members, and several others who provided insightful comments.

Dr. Brockenbrough Allen made a signal contribution to the project by conducting a special graduate course that explored the use of new computer software for the development of the WELLS curriculum. Our thanks to Brock and the talented students that he supervised for their unique contribution to this work.

Dr. Augustine Gallego, Chancellor of The San Diego Community College District convened a team including William B. Armstrong and William Grimes to participate in the conceptualization of the WELL Action Research Center. Through the work of this team, several other faculty and staff of the Continuing Education Division attended meetings and provided comments regarding the ARC. We are thankful for the comments and generous spirit of cooperation provided by the SDCCD faculty and staff.

M. Gail Spangenberg, Vice President, Business Council for Effective Literacy stimulated the senior author to pursue this project through the good offices of the William and Flora Hewlett Foundation. She has consistently offered insightful commentary and observations on matters related to the need for professionalization in the field of adult literacy and workplace education. We are indebted to Gail for her many contributions to this work.

Appreciation is also expressed to Drs. Eunice Askov, John Bruer, and Hanah Fingeret for their comments on the draft version of this report.

The ideas and opinions expressed in this report do not necessarily reflect the opinions or policies of the William and Flora Hewlett Foundation or the Applied Behavioral & Cognitive Sciences, Inc.

Chapter 1

The WELL Concept

This chapter introduces the concept of **workforce education and lifelong learning** as a newly emerging strategy for meeting many of the the challenges of education and work in the 21st century. It reviews the sociopolitical background to the strategy, and presents the rationale for a new professional, the **Workforce Education and Lifelong Learning Specialist (WELLS).** The WELLS is professionally prepared to promote lifelong learning that emphasizes the development of attitudes, knowledge and skills for productive parenting, citizenship and work, with a focus on the education and training of youth and adults who are traditionally undereducated, non-college educated and who work in non-management jobs. To provide a practicum setting for the education and training of the WELLS, and to develop research-validated knowledge for the WELLS, the concept of the **WELL Action Research Center (ARC)** is introduced. Succeeding chapters elaborate on the WELLS and ARC concepts and present designs for a WELLS graduate degree program and an ARC that contributes to the professional development of the WELL Specialist while improving learning opportunities for youth and adults in a designated **ARC Community.**

In the United States today, a major societal tool for developing cognitive abilities, the public schools, has come under heavy criticism. In the last decade, over two dozen major reports have criticized the public schools and the teachers who work in those schools.[1] Without exception, these reports note that hundreds of thousands of students dropout of school before obtaining a high school diploma, and many of these dropouts have achieved only lower levels of cognitive abilities. It has been estimated that one out of eight (13%) of those who do graduate from high school are "functionally illiterate."[2]

This project is concerned with this segment of the youth and adult population who are not realizing the American Dream, who may not graduate from high school or, if they do, who may not possess the highly developed skills necessary to achieve full participation in our society. Too many Americans are losing the opportunity to achieve high levels of self esteem that mastery of skills and responsible and rewarding work brings. For these individuals, sometimes called the "forgotten half," the lack of employability may stimulate a downward spiral, from a loss of self esteem and identity to a depression of learned helplessness. In other areas of life, too, self esteem and complex skills are just as important. It has been speculated by many that we are separating more and more into the haves and have nots as technology advances separate our society into people who can keep up and those who cannot. This project aims to help the have nots have.

Cognition, Poverty, and Productivity

For those who reach adulthood having achieved only low levels of skills, unemployment or a lifetime of underemployment, welfare, and poverty is not unusual. African-Americans and Hispanics suffer more from failure to achieve higher levels of schooling needed to obtain complex knowledge and information processing skills, and economic problems are more frequent and difficult to overcome in these groups.[1]

In addition to contributing to the perpetuation of poverty among various groups, it has been suggested that the consequences of low achievement and productivity in the education system is low achievement and productivity in the workplace, and this has resulted in the United States losing its competitive edge in the international marketplace.[2]

Cognition, Demographics, and Work

The nature of problems of unemployment or underemployment, and competitiveness in the international marketplace are expected to change in the future due to two major trends. One is that the population of youth is declining, except for minority groups. This means that minorities with lower levels of educational achievement will make up a greater percentage of the work force in the years ahead.[3]

The second trend is that the nature of work in America is changing. On the one hand, the largest number of jobs are in the less cognitively demanding and lower paying sectors and hence, while jobs for the less numerous youth population will be available, they will be poorer paying ones. On the other hand, studies sponsored by the U. S. Department of Labor argue that a large number of the new jobs that will be created between 1984 and the year 2000 will demand higher levels of education and higher level cognitive skills to rapidly learn new knowledge and skills as jobs change in the wake of new technological advances.[3]

The two trends taken together have lead many to suggest that in the next few years there will be fewer young adults with the highly practiced complex work skills needed to meet the demands of the better paying jobs that will make the United States competitive in the international marketplace. Therefore, it has been argued, there is a need for educational reform to improve the productivity of the schools, so they may provide opportunities for students to acquire the highly practiced, complex skills needed to improve their personal competitiveness and the productivity of the workforce of the future, thereby enhancing the international competitiveness of the United States.[2] Of course, this must be accompanied by changes in management practices and government trade policies that also contribute to the nation's lack of competitiveness.

The Emergence of the Workforce Education and Lifelong Learning (WELL) Strategy for Workplace and Education Reform

Over the last few years a number of studies and reports have appeared that have culminated in what we are here calling the **Well Strategy.** The Well Strategy addresses calls for educational reform that better educates and prepares people for an existing world of work. But the Well Strategy approaches school reform through reform of the workplace, too. The Well Strategy takes an approach that stimulates the creation of a new world of work in which employees are empowered to operate at a much higher level of cognitive and interpersonal skills than is currently the case. The WELL Strategy plans for a positive cycle to occur such that, as the skills of the workforce are improved, there is demand by workers for more cognitively demanding workplaces that entail more collaboration and more shared decision-making with management. Then, it is anticipated that, as there is a shift away from the "assembly line" mentality in the workforce, there will be a corresponding demand for a reduced "assembly line" mentality in the schools.

Perhaps the most important report that added a significant new dimension to the issue of educational reform and workforce competitiveness, and stimulated the eventual conception of the Well Strategy was the 1987 report by the Hudson Institute entitled, "*Workforce 2000: Work and Workers for the Twenty-First Century*".[3] What the labor

economists pointed out in that report was that, even if school reform could be rapidly accomplished, it would have little influence on workplace productivity in the next twenty years because out-of-school youth and adults are not subject to school reforms and they will constitute more than three-quarters of the workforce of the year 2000.

Adult Literacy Skills Assessments. This new appreciation of the importance of the present workforce to the nation's competitiveness posture of the next century focussed attention on programs for the education and training of out-of-school youth and adults. Of special concern was youth and adult "literacy" or "basic skills." The Nation at Risk report had suggested that some 13 percent of high school leavers were "functionally illiterate." In 1986 the National Assessment of Educational Progress (NAEP) published the results of a national survey of the literacy skills of young adults 21 to 25 years of age. It reported that one in five failed to meet the eighth grade standard for functional literacy established a quarter century earlier in the War on Poverty.[4] The Work in America Institute reported data suggesting that over fifty percent of young adults aged 18 to 23 in 1980 had literacy skills below those of the beginning tenth grader, while one in twenty had skills below that of a fifth grade child (pp.172-177).[5]

Surveys of Education and Training in Workplaces. To find out what business and industry were doing about the skills needs of their non-management, line employees, numerous surveys were conducted by various groups. The American Society for Training and Development (ASTD) conducted a three-year project sponsored by the U. S. Department of Labor regarding the basic skills employers want. They reported that the "wish list" of skills wanted are: learning to learn, reading, writing, mathematics, speaking, listening, solving problems, thinking creatively, managing personal and professional growth, group effectiveness skills, and organizational skills.[6] Despite this "wish list," however, most companies do not provide employee training in any of these skills. In fact, only eight percent of front-line workers receive any formal training once on the job.[7]

Government Programs. The increased emphasis on adult basic skills education resulted in the "infusion" of adult basic skills programs into various government programs. The Head Start program has called for each Head Start provider to provide adult literacy training; Chapter 1 of the Education Consolidation Act now includes the Even Start program in which parents and children are both educated in basic academic skills; the Family Support Act of 1988 incorporates basic skills training for welfare recipients in the Job Opportunities and Basic Skills Training (JOBS) program; the U. S. Departments of Education and Labor both initiated Workplace Literacy programs that support partnerships of education providers, businesses, unions and community-based groups to provide basic skills (literacy) education for employees; programs for family literacy are supported by the U.S. Department of Education's program for bilingual and minority education, and increments were made in the budget for the U. S. Department of Education's Divison of Adult Education.

The Commission on the Skills of the American Workforce. This Commission reported in June 1990 the results of a year-long study of the productivity of the American workforce in relation to that of other, strongly competitive nations. They concluded that the American workplace is too often designed to remove the requirements for the use of complex actions by workers, following the "scientific managment" approach of the early industrial age. This approach produces the assembly line type of work in which workers perform one prescribed action, make no decisions and management does all the thinking.[8]

Competitor nations, on the other hand, were found to be using a "high performance" approach to work in which many complex actions and decisions are pushed "down" from management to line workers. The use of "focus factory" or "total business" schemes in manufacturing, for instance, requires line workers to take-on responsibility for an entire product. This means contacting customers, taking orders, obtaining raw materials in just enough supply to meet present needs, but not so much as to require expensive warehousing, negotiating in the work team to prepare production schedules, producing a product, performing quality control on the product, packaging and shipping the product to the customer.

The Commission recommended that American industry provide much more education and training for the existing workforce, and that a new educational system for children and adults be developed that would provide "high performance" schools. In this system, all children would be permitted to strive for a "Certificate of Initial Mastery" by age sixteen. This Certificate would certify the student as work-ready for entry level jobs in high performance businesses.

For students "at risk" for dropping out of school, a "Youth Center" school separate from the regular secondary school would be established. Such Centers would offer **apprenticeship** programs or other types of part-school part-work programs to help students make the transition from school to work.

Then, once on the job, Certificates of Advanced Mastery would be available to provide incentives for workers to strive to complete more education and training to develop higher levels of competence. Promotions and pay raises would then be based on competence, rather than on seniority as in many companies.

The Secretary's Commission on Achieving Necessary Skills (SCANS). Following-up on the recommendation's of the Commission on the Skills of the American Workforce, the Secretary of Labor in 1990 established the SCANS to identify the skills necessary for productive work in high performance busnesses and industries. These skills, once identified, and subjected to modifications based on national forums, are to form the basis for the Certificates of Initial Mastery recommended by the Commission on the Skills of the American Workforce. With these skills and certification procedures identified, the SCANS aims to provide a stimulus for schools to transform themselves from the "assembly line" models that reflect "assembly line" workplaces, to "high performance" schools that resemble "high performance" workplaces.[9]

The National Education Goals and the Intergenerational Cycle of Cognitive Development

Reflecting the national mood for educational reform across the lifespan to make the U. S. more competitive in the new world economic order, the nation's fifty Governors and the President in February of 1990 adopted six ambitious national education goals. Again, building on the newly recognized importance of adult education in improving national competitiveness and in reforming the schools through parental involvement, half of these goals concerned adult education and the adults' role in the education of their children.

The first of the goals calls for all American children to be prepared by parents at home and in the community to be ready for school by the time they are school age. The fifth goal states, "By the year 2000, every adult American will be literate and will possess the

knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship." The sixth goal calls for every school in America to be free of drugs and violence and to offer a disciplined environment conducive to learning. It calls for parents, businesses and community organizations to form teams to work together to achieve this goal.

These three goals focus on the role of adults and the community in the education of each new generation of citizens. Adults themselves need to be highly educated so that as parents they may prepare their children for learning in school. They need skills and knowledge so that they can individually compete for well-paying jobs and serve as members of a world-class workforce that can compete for high-wage jobs in the new world economic order. And they need to consititute a social community that is conducive to learning both in and out of school.

AMERICA 2000

In what is more or less the culmination of the various efforts that have cast a light on the importance of adult workforce education and lifelong learning, on April 18, 1991, President Bush announced *AMERICA 2000: An Education Strategy*, a four-track strategy for revitalizing American education for the 21st century. Significantly, while the strategy does emphasize improving the K-12 education system, two of the four tracks are concerned with the education of out-of-school youth and adults.[10]

Track III of AMERICA 2000 is entitled *For the Rest of Us (Yesterday's Students/Today's Workforce): A Nation of Students*. In a move to transform the United States from a "Nation at Risk" to a "Nation of Students," this part of the strategy states that

> Eighty-five percent of America's work force for the year 2000 is already in the work force today, so improving schools for today's and tomorrow's students is not enough to assure a competitive America in 2000. And we need more than job skills to live well in America today. We need to learn more to become better parents, neighbors, citizens and friends. Education is not just about making a living; it is also about making a life.
>
> That is why the President is challenging adult Americans to "go back to school" and make this a "Nation of Students." For our children to understand the importance of their own education, we must demonstrate that learning is important for grown-ups, too. We must "go back to school" ourselves. The President is urging every American to continue learning throughout his or her life, using the myriad formal and informal means available to gain further knowledge and skills.

Track III goes on to recommend that business and labor establish job-related skill standards built around core proficiencies that can form the basis for "skill certificates" to be awarded to youth and adults who qualify; that skill "clinics" be established in every large community where people can find out how well their present skills compare with those they would like to have for working in various jobs and where they can acquire the skills and knowledge they need; and that a recommitment be made to adult educational programs that aim to promote literacy, including the specification of performance standards for all federally aided programs and making programs accountable for meeting these standards.

The "Learning Community." Track IV of America 2000 calls for the creation of communities where learning can happen. This Track points out that there are limits to what the government and schools can accomplish.

> Government at every level can play a useful role, and it is incumbent upon all of us to see that this is done efficiently and adequately. But much of the work of creating and sustaining healthy communities - communities where education really happens - can only be performed by those who live in them: by parents, families, neighbors and other caring adults; by churches, neighborhood associations, community organizations, voluntary groups and the other "little platoons" that have long characterized well-functioning American communities. Such groups are essential to building relationships that nurture children and provide them with people and places to which they can turn for help and guidance.

To accomplish the development of learning communities, *America 2000* emphasizes the importance of individual responsibility.

> Increased attention will be focused on adult behavior, responsibility for children and family, and community values essential for strong schools. This includes involving parents as teachers of their children and as school partners.

Both AMERICA 2000 and the National Education Goals emphasize the unique role of adults in providing an intergenerational transfer of pre-school language and cognitive skills, in-school help and assistance so that children may be supported and motivated to succeed, and citizen action to be or to become the educated workforce and community of lifelong learners needed to ensure each new generation the right to life, liberty and the pursuit of happiness.

The California Workforce Literacy Task Force

The debates and discussions preceeding the adoption of the National Education Goals and AMERICA 2000 included a number of activities by individual states in which many of the problems cited by the National Governor's Association and the President were identified.

On March 10, 1989 the California State Legislature's Joint Committee on the State's Economy and the Senate Select Committee on Small Business Enterprises held public hearings regarding the levels of adult literacy in California's workforce. The general concern was that the ability of California businesses to compete in the national and international marketplace might be hampered by low educational and literacy attainment in the workforce.

Given the breadth and complexity of the issues raised at the March 10, 1989 hearings, and the lack of information regarding workplace literacy problems, the Legislature on May 17, 1989 passed Senate Resolution No. 20 creating the **California Workforce Literacy Task Force.**

The mission of the Task Force was to review workforce and workplace literacy issues and develop specific recommendations to enable the Legislature to consider and adopt a long range program to enhance workforce education and skills formation in California.

Major Findings of the Task Force. The Task Force found that, despite an increasingly competitive international and national economy, California continues to underinvest in the skills development of that half of its adult citizens who are out-of-school but typically not college bound.[11] These adults are likely to be below average in the skills of language, literacy, mathematics, reasoning, and problem solving, and for these reasons they are likely to be less productive than their more accomplished workmates. Specific findings related to the skills of underprepared youth and adults included

> More than half of California's youth and adults are not seeking higher education.
>
> Over 40% of California's applicants for military service in fiscal year 1989 scored at the 8th grade level or below in literacy.
>
> An estimated seven million of California's youth and adults age fifteen and older have educationally developed skills below the ninth grade level, and many are in need of English language training.
>
> State provided literacy programs cannot meet the present demands for services, yet a majority of those who could benefit from additional education are not being reached, and of those who are served most drop out without increasing their skills to the ninth grade level.
>
> There are over a thousand adult education and training program providers now operating in California in an uncoordinated and underevaluated manner.
>
> Unlike the Master Plan for Higher Education, there is no Master Plan for the education of undereducated youth and adults in California that integrates the roles of government agencies; businesses and industries; workers unions; community-based organizations; library related services; secondary and postsecondary institutions.

The Delivery System for Adult Literacy Education and Training. As indicated in Table 1, the California Workforce Literacy Task Force found 11 State supported programs spending some $850 million dollars for providing youth and adult basic skills education. Additionally, several programs in early childhood education provide basic skills training for parents: Families for Literacy ($700,000); Chapter 1, Even Start ($718,935); Head Start ($114 million in California for children and parent education); Family English Literacy Program ($150,000).

Even with all these programs most of the population in need of literacy and other cognitive skills development are not being reached and served by the current delivery system. In 1987, some 1100 literacy programs served less than one in seven of the millions of youth and adults who read below the ninth grade level. Most left without achieving ninth grade skills.

Table 1

California State Government Programs for Improving Adult Basic Skills

Program	Estimated Funding	Estimated Numbers Served
Adult Schools	$461,000,000	199,500 ADA
Community Colleges	129,000,000	86,500 ADA
Regional Occupation Centers & Programs	95,000,000(a)	147,396(a)
Public Libraries	3,063,000	24,249(b)
Job Training Partnership Act	61,600,000(c)	47,230(c)
Employment Training Panel	4,500,325(d)	1,600(d)
Division of Apprenticeship Standards	5,998,000	50,000
California Department of Corrections	58,600,000	15,000
California Youth Authority	30,800,000	6,000
County Jails	5,700,000(e)	5,323 ADA(e)
California Conservation Corps	512,000(f)	1,460(f)
Totals (see caution below):	$853,261,325	584,258

NOTE: These are estimated funding and numbers served for participants in non- credit or remedial education programs in Fiscal Year 1990-91, except where noted. See footnote 21, page 41, for sources and additional notes. CAUTION: Total dollar figure overestimates amounts for the 11 programs with funds listed due to duplicate reporting, such as JTPA monies mixed in the Adult Schools budgets. No fund listing was available for 2 of the 13 programs. For these reasons the total funds given do not accurately state the exact amounts available for adult literacy education. The total numbers served is also misleading because it mixes ADA figures, in which one ADA may involve 2 or more students, with actual individual participation in some programs. Thus, the numbers served is probably underestimated. Apparently no one knows the exact funding or numbers served in these programs. This table is reproduced from the final report of the California Workforce Literacy Task Force, p.27.

Lack of Business Involvement. The current adult education system does not include significant involvement of business and industry in workforce education and training for non-management personnel, yet the workplace is where most of those in need are found.

Many businesses and industries in California are now employing workers whose skills are below the ninth grade level and whose productivity is not as great as it should be. For instance, of 500 applicants for work in a major defense contracting firm in San Diego, one in four read below the ninth grade level. For some 8,000 employees in 220 companies in California, personnel managers reported that some five percent were deficient in reading, nine percent were deficient in mathematics, and twelve percent were judged to be deficient in writing and oral communication.

Despite these reports of low-skilled employees, most California businesses provide few educational opportunities for workers below the management level.

Union Concern. In addition to reports from employers regarding skills needs of their workforce, the Task Force found that many worker's unions have members in need of additional training in academic skills. On average, union officials from the AFL-CIO estimated that over a quarter of their members suffer from a "gap" between their current literacy skills and the levels needed for highly competitive work.

Workforce Education in the Transition From School To Work. The Task Force found that California does not have a well articulated education program to assist in the transition from school to work for non-college bound youth. Many non-college bound youth and adults who do not have a high school diploma or the equivalent cannot take advantage of California's apprenticeship program.

The Cycles Of Marginal Literacy and Marginal Living. The Task Force found that children's educational achievement in school is directly related to their parent's, and especially mother's, education level. Studies of pre-school and primary school compensatory education programs repeatedly emphasize the importance of parental involvement for the success of programs.

In California, more money ($1.3 billion) is spent on the children of the poor trying to compensate for the parent's lack of education than is spent on parental education to prevent children's school learning and adaptation problems. Yet, new federal laws are calling for integrating adult basic education with early childhood education and this calls for new education delivery systems and methods.

Research and Professional Development. The Task Force found that, while there has been a growing awareness that enhancing the basic skills of working age youth and adults is essential if the nation is to successfully meet the economic challenges that it faces, and this is true of California as well, there is a lack of research-based knowledge to guide those who are interested in promoting basic skills education and training for workforce education and lifelong learning.

Moreover, there is not an adequately trained cadre of professional educators and trainers who are equipped to provide adult education and training.[12] "We know that most of the nation's teaching force in adult education consists of school teachers working part-time and volunteers neither of whom have extensive formal training in basic skills education for adults. It is not fair to be critical of this teaching force, because so little effort has been made to give them the results of research and experience in usable form and place it at their disposal." It is also hard to evaluate the teaching force, given how little we know about what works in the field (p. 6).[13]

In California, the lack of knowledge about how best to recruit, educate and evaluate adult education programs has been dramatically illustrated by the California Adult Student Assessment System (CASAS) project. The CASAS project was funded by the California Department of Education, Adult Education Unit to evaluate the effectiveness of competency-based education. Data for six years of the project indicated that, on the average, students enter adult basic education (not ESL) programs reading at the mid-sixth grade level and leave after 80 to 120 hours reading at the mid-seventh grade level. Most recent data (July 1, 1990-June 30, 1991) show about a 6 month gain. Forty-five percent dropped-out before completing 81 hours of instruction.[14] By contrast, the Literacy Center of New York City reported for 1989-1990 gains of 9.1 months and an average of 112.3 instructional hours in the garden variety of programs for adult literacy in New York city.[15]

That California's competency-based program, which has been designated as an exemplary method of instruction by the U. S. Department of Education, fails to make any more gain or to retain students any better than any other type of program illustrates the need for research on adult education delivery systems, teaching methods, learning skills, and curricula. This is of particular importance given the estimates by some that as many as 10 to 30 percent of adult literacy students may suffer from serious learning disabilities.

The most commonly voiced need in the adult basic skills field is for more access to better information on how to deliver improved services (p.24).[13] Current research efforts are small and fragmented, there are few reliable and readily accessible sources of information about what is known, and testing instruments and other basic tools are far from satisfactory. One reason given is that there are only a few dozen recognized researchers that are addressing the problems of basic skills training for adults— many of them on a part-time basis. At most, a few million dollars per year are spent by government, industry, foundations and voluntary groups on research (p. 6).[13]

Given the importance of research and professionally prepared educators for dealing with the broad range of needs of undereducated youth and adults in California, the Task Force recommended to the Legislature that it

> **Establish a network of field stations for action research on adult education in association with campuses of the California State University and Community College system, oriented to developing information about California's workforce skills needs, abilities of the non-college bound workforce, and the development of improved methods of education and training for non-college bound youth and adults; further that the Legislature request the California State University and Community College systems to establish formal programs to educate and train a cadre of adult educators who can work with the spectrum of education, language, and learning needs of California's undereducated youth and adults.**

In making its recommendations the Task Force envisioned that the program of professional education would work in close cooperation with the network of field stations in developing validated education and training curricula for professional adult educators.

The WELL Strategy

As indicated by the review of sociopolitical activities over the last decade, there is today an enhanced recognition of the importance of youth and adult education for the improvement of both economic competitiveness and educational reform. Better educated adults make better parents who can better prepare their children for school, help children with homework , advocate for their children throughout their school years, and promote the development of safe, nurturing communities. Better educated adults make better employees who are more productive and competent for working in high performance workplaces.

The WELL Strategy discussed in this paper calls for reform of the workplace and the schools. The WELL Strategy concentrates on the wide spectrum of individuals, youth and adults, who are not achieving high levels of education and therefore higher level jobs; those individuals who are either dropping out of society or being kept out or left out; those whose children have fewer opportunities to participate; and those who, up to now, have been given little and inadequate assistance in achieving their goals. The WELL Strategy recognizes that the solutions to problems of educational improvement for personal and international competitiveness involve much more than improving the skills of youth and adult learners. But the provision of good, genuinely developmental education for youth and adults too often cast off by society is a good starting place.

The WELL Strategy calls for change - in the way the resources are allocated to solve America's educational problems, in the way America thinks about education and jobs, in the way communities are involved in education, and in the methods used to make these changes. And the WELL Strategy calls for the creation of a new educator to promote workforce education and lifelong learning and a research endeavor to promote understanding of the changes needed.

The WELL Specialist

Given the proliferation of programs for youth and adults that emphasize lifelong learning, workplace, citizenship and parenting skills, there is a need for professionally trained educators who can design, deliver, and evaluate programs in a wide variety of institutional settings.

The majority of teachers in adult basic education are part-time with little formal education about adults as learners. They have little experience with family literacy or school-to-work transitional programs for youth, little experience in education and training in workplaces, and little understanding of curriculum development and evaluation methods.

The **Workforce Education and Lifelong Learning Specialist (WELLS)** is proposed as a professional educator trained in meeting the educational needs of youth and adults that are traditionally undereducated and underprepared for taking part in advanced education and training to develop high levels of parenting and workforce skills. The WELLS professional preparation will permit the WELLS to implement the workforce education and lifelong learning strategy in the wide variety of settings that have been and are initiating adult basic skills and advanced skills education and training. This includes early childhood settings (Head Start, Even Start, and other Family literacy programs that emphasize the joint education of children and adults), job-training settings (JTPA and JOBS-sponsored education; the Job Corps; union halls; workplaces), correctional facilities, and adult schools in secondary or community college settings.

Chapter 2 discusses the WELLS professional degree in greater detail. It provides a model curriculum of sufficient depth and breadth to prepare graduates to meet the challenges for professional education for traditionally difficult-to-educate, youth and adults in the diverse organizational settings where educational services are needed.

The WELL Action Research Center and Community Development

One aspect of the workforce education and lifelong learning strategy to improve educational and economic productivity is the idea, hypothesis really, that a better educated community will attract better, high performance work. The Secretary's Commission on Achieving Necessary Skills (SCANS) directly advocates the development of a high skilled workforce as a means of stimulating more businesses and industries to adopt high performance work practices that empower workers to make decisions, interact with customers, and participate as members of worker-managment teams.

The workforce education and lifelong learning strategy aims not only to prepare people for productive work, but also to produce better "learning communities" that produce more highly skilled citizens who can attract more high performance, better paying jobs. From this point of view, workforce education aims not only to prepare people for an existing world of work, but also to stimulate the creation of a new world of work in which employees are empowered to operate at a much higher level of cognitive and interpersonal skills than is currently the case.

A major feature of the workforce education and lifelong learning strategy is that it may lead to reform of the schools. The reasoning is that if the skills of the workforce are improved, then workers will eventually demand and employers will develop more cognitively demanding, high performance workplaces in which employees are engaged in high order, collaborative, decision making skills along with management. Then, since the schools largely model themselves after the world of work, as they did in adopting the "scientific" "assembly line" schools fractionated into grade 1, 2, etc., after the industrial revolution, it is expected that schools will transform themselves into "high performance" organizations in which teachers, students and management collaborate in higher order decision making and management of the learning process. This will happen, it is hypothesized, when schools realize that they can no longer provide graduates with "assembly line" mentalities for new, "high performance" workplaces. Instead, they must provide "high performance" mentalities for "high performance" work.

The WELL Action Research Center (ARC) is proposed as a means of providing a setting in which the WELL Specialist can obtain practical experience in providing educational services to undereducated youth and adults. Additionally, the ARC will provide research-based knowledge for both the WELLS and the members of the ARC Community so that the latter can become an empowered "learning community" that can more effectively utilize the cultural diversity and cognitive strengths of its members to engage in sociopolitical, educational, and economic activities to enrich the community.

Chapter 3 develops the concept of the ARC and the ARC Community in greater detail. It provides (1) a review of present federal and state research activities related to workforce education and lifelong learning, (2) a discussion of action research and its relationship to staff and community development, and (3) a model agenda for a WELL ARC.

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Chapter 2

The WELLS: Workforce Education and Lifelong Learning Specialist

This chapter develops the concept of a professional degree for educators and human resource professionals who wish to obtain advanced education and training as a Workforce Education and Lifelong Learning Specialist (WELLS). It first specifies the need for a WELL specialist and indicates the growing opportunities for professional work as a WELLS. Next it discusses the knowledge and skills that the WELLS curriculum should develop in three major domains: the Cognitive Science Foundations of Education; Educational Arts and Technologies, and Cultural and Human Resources Policies and Practices. Finally, it discusses the role of college faculties in implementing the design for a WELLS.

A review of adult education college degree programs and adult basic education staff development needs and offerings across the nation revealed that there is today no systematic higher education and training to produce professional adult educators and trainers for the various programs that serve undereducated, generally non-college bound youth and adults, many of whom may suffer from serious learning problems. A critical need exists for professionals who can develop curricula and teaching methods that address:

(1) New workforce education and certification systems as envisaged by the Commission on the Skills of the American Workforce; the Secretary's Commission on Achieving Necessary Skills; and the National Advisory Commission on Work-Based Learning;

(2) Youth to work transitions, including apprenticeships;

(3) Family literacy that includes both adult and childhood education;

(4) Workplace literacy for integrating basic skills and job technical skills training;

(5) Traditional adult literacy, basic education, and secondary education;

(6) English as a Second Language education for youth and adults;

(7) The widely diverse needs of youth and adult learners in settings such as the Job Corps; Corrections, Youth Conservation Corps, and community-based education and training organizations.

The WELLS

TheWorkforce Education and Lifelong Learning Specialist (WELLS) addresses the need for a professional educator's degree program that can produce a cadre of educators specializing in the education and training of underserved youth and adults to prepare them for productive, well-paying work, responsible parenting, citizenship, and community development (the "learning community").

New Job Opportunities for WELLS

As noted in Chapter 1, a number of new laws and federal and state initiatives have created a growing demand for educators of undereducated, typically non-college bound youth and adults. Among these are:

Education 2000: The President's new Education 2000 strategy has four parts. Parts 3 and 4 call for an increased emphasis upon adult literacy, lifelong training and learning in the workplace, and community commitment to learning. Business and industry are putting increased resources into the training and education of non-management, line workers. These activities have stimulated additional opportunties for professionals in the lifelong education of underserved youth and adults.

Family Support Act: This act includes the Job-Oriented Basic Skills (JOBS) program which requires that undereducated welfare participants in the Aid For Dependent Children (AFDC) program receive basic skills education.

Workplace Literacy: The U.S. Department of Education sponsored $20 million in workplace literacy programs in 1991. The U.S. Department of Labor sponsors an additional $5 million in workforce literacy programs. The new National Literacy Act of 1991 adds some $85 million to these activities.

Job Training Partnership Act: The law governing the JTPA program requires that basic skills instruction be incorporated where needed in training programs funded under this act.

Adult Education: The Federal Adult Education program has been increased to some $260 million to provide basic and secondary education to out-of-school youth and adults.

Public Law 102-73: the National Literacy Act of 1991: This law creates a National Literacy Institute with authorizations of $15 million for research and program development in adult literacy. Additionally, the law authorizes $25 million for regional adult literacy centers and some $200 million for adult literacy education activities in workforce education, family literacy, correctional education and other programs.

Head Start: Increasingly, Head Start is shifting its focus from children to families. This is creating the need for professionals with combined understanding of early childhood and adult education.

Even Start: The $6 billion dollar Chapter 1 compensatory education program now includes $15 million in funds for family literacy. The aim is to focus on both children and their parents. The new National Literacy Act of 1991 authorizes $100 million for Even Start programs. Again, this calls for educators who understand both children's and adults' education.

In addition to these federal programs, the California Workforce Literacy Task Force found over a dozen programs that provide opportunities for professionals trained in workforce education and lifelong learning with an emphasis on non-college bound youth and adults (see Table 1 in Chapter 1):

Employment Training Panel: Presently employers with over 100 employees pay 1/10th of 1 percent of payroll into the Employment Training Panel to support retraining of workers that face layoffs or technological changes in their jobs. This presently produces some $55 million for training in California.

Adult Education: The California State Department of Education provides some $600 million in funds for adult basic and secondary education. Most of the teachers in these programs have not been educated in a professional program for adult educators and teachers of non-college bound youth and adults. Many would like to have an advanced degree in their chosen field.

Early Childhood Education: More than $1billion is spent in California on early childhood programs such as Head Start and Chapter 1. More and more, policies are being implemented that will shift these programs away from a strict emphasis upon the education of children to a focus on educating parents and children together in family literacy projects. This would add hundreds of millions of dollars to the present family literacy programs and increase the need for professionals trained in both childhood and adulthood education , ie. lifelong learning.

With this increased and growing interest and funding of youth and adult programs for workforce and lifelong learning, particularly among the non-college bound, there are growing opportunities for professionals educated and trained to serve the educational needs of this very large, and traditionally underserved segment of society.

Design for a WELLS Curriculum

The new emphasis upon workforce education and lifelong learning calls for professional educators with preparation that cuts across traditional boundaries of early childhood, adolescence, and adulthood education; academic (reading, mathematics, science, etc.) education , vocational education, and job training; home, community, school, and work place settings for education; and diverse cultural and language groups.

The WELLS Challenge

One of the biggest challenges confronting the design for the WELLS curriculum is to overcome beliefs about learning that are erroneous and counterproductive to educational reform but are nevertheless widespread. This is necessary to counter the claims of those who would argue that there is no need for a WELLS because, "We already know what to do, what we need is more money with which to do it." The WELLS professional degree program is proposed because, as the problems reviewed below indicate, in many cases educational providers simply do not know what to do or how to do it. The problems reviewed here are not an exhaustive listing of educational "malpractice" in youth and adult education, but rather a sampling of beliefs and the practices and outcomes they lead to, that indicate that many times educational providers, even experienced professionals, do *not* know what to do, and in fact may harbor beliefs leading to practices that actually detract from the development of excellent programs for youth and adults. These are practices and beliefs that a WELLS must learn about and be prepared to overcome.

Problem: Methods, materials, and programs for training underserved youth and adults in basic skills are frequently not very successful.

Item: In the mid-1960's, when the Adult Education Act was first passed, "functional literacy" was designated as having reading and mathematics skills equivalent to those of a typical grade school student who had completed the eighth grade (i.e., who had reading skills at the 8.9 grade level). In the national survey of young adult literacy in 1985 it was found that one out of five (20 percent) of young adults read with skills below that of typical 8th graders. Further studies have shown that (1) for over a quarter century, on the average, Job Corps learners have entered reading with sixth grade

skills and left reading with seventh grade skills; (2) averaged over the last six years, adults in California's adult basic education programs that are assessed by the Comprehensive Adult Student Assessment System have entered adult basic education reading at the mid-sixth grade level and left reading at the mid-seventh grade level; (3) in New York city, 65 percent of the more than 8,000 adult basic education students reported to the Literacy Assistance Center's data bank entered reading at or below the 6.9 grade level, made about ten months improvement and left reading below the eighth grade level. Data available for some 788 learners who had been enrolled in adult basic education programs for three years showed that 93 percent entered reading below the 6.9 grade level and two-thirds of these learners read below the 4.9 grade level at entry. On the average, these three year learners made a gain of around 16 months to about the mid-sixth grade level. In general, studies of adult basic education indicate that most students enter reading at levels that would define them as functionally illiterate and leave at levels that would still define them as functionally illiterate by most contemporary standards. No one knows how much gain is retained after leaving programs.

Problem: There are cultural beliefs and stereotypes about adult learning that are erroneous and extremely counterproductive to education.

Item: On Sunday, October 13, 1991 The San Diego Union newspaper reprinted an article by Joan Beck, columnist for the Chicago Tribune that argued for early childhood education because, "Half of adult intellectual capacity is already present by age 4 and 80 percent by age 8, the great education researcher Dr. Benjamin Bloom reported in scholarly studies in the 1960s that helped establish the importance of early learning. No matter how good schools are, how capable and caring the teachers, they will not have as much effect on a child's permanent level of intelligence as has the environment in which he has lived before he started to first grade. A school may teach him a zillion facts and inspire him to use the mental capacity he has, but the opportunity to influence his basic intelligence - considered to be a stable characteristic by age 17 - is greatest in early life."

The influence of such beliefs was illustrated a year earlier in the same newpaper on October 14, 1990 in an article in which a staff member of the California state library system was interviewed. The staff member, who was in charge of the library's family literacy programs was quoted as justifying the importance of family literacy, in which parents are taught the importance of reading to their pre-school children, because, "Between the ages of zero to 4 we have learned half of everything we'll ever learn in our lives. Most of that has to do with language, imagination, and inquisitiveness."

The Military has encountered this attitude, also.

Item: A December, 1989 report summarized a study of how recruits designated as "low aptitude" on the basis of their scores on basic skills (reading and mathematics) tests fared some twenty years after military service. Researchers funded by the Department of Defense stated in the report that, "Military training for marginal youth may be too little, too late. To compensate for the deficits which the underprivileged bring with them would require more than a little extra training, and maybe a complete restructuring of current pedagogical practices." On February 24, 1990, the Director of Accession Policy of the Department of Defense commented on the report in the Washington Post newspaper, "The lesson is that low-aptitude people, whether in the military or not, are always going to be at a disadvantage. That's a sad conclusion." Then on April 8, 1990 Jack Anderson's column in the Washington Post quoted one of the researchers saying, "...by the age of 18 or 19, it's too late. The school system in early childhood is the only place to really help, and that involves heavy participation by the parents."

Neither the articles about the Department of Defense study nor the articles about intellectual development in early childhood mentioned in the preceeding item elicited responses from the adult (or any other) education field challenging these conclusions and beliefs about human cognitive development, which, if true, would have dire implications for the success of the Education 2000 strategy, the achievement of Goal 5 of the National Education Goals, and the work of those involved in the training and education of youth and adults in any setting, including the military, job training, corrections, adult basic education, workplace literacy, and even family literacy.

Problem: Even when money is targeted for workforce education, the implementation may not be based on a sound understanding of human cognitive development (including the "basic skills") that could guide the intelligent use of that money.

Item: In the late 1980's and early '90's, a major international corporation acted to improve its competitiveness by improving the quality of its products. As one part of its strategy for quality improvement, it moved to improve its employee's basic skills. It made a commitment of $25 million to this effort. In a decentralized manner, various plants implemented their own basic skills programs. One purchased thousands of dollars of computers and subscribed to a telecommunications network that claimed to make one year's improvement in basic skills for each ten hours of instruction. Another plant contracted with a major learning center company that stated that it would increase basic skills one year for every sixty hours of instruction. Other plants contracted with community colleges that simply offered to teach basic skills, with no promises of gains.

No one wondered how people who had not learned basic skills well in their school days could now be expected to learn in ten or sixty hours what the normal, typical child takes a full year of learning in school and out to achieve. No one knew what the basic skills that were used on the job actually were and how the training in the basic skills programs was supposed to be transferred to the worksite. No one understood standardized testing and how test artifacts such as regression to the mean could produce a year of gain with no basic skills training at all. No one evaluated the effects of basic skills training on work quality and productivity. Following critiques of their programs, the corporation initiated activities to develop "functional context" workplace literacy programs that taught basic skills contextualized within work tasks requiring those skills.

Problem: Assessment of basic skills learning or program evaluation is not done based on an integrated theory of measurement.

Item: An adult basic skills program in the Appalachian region applied to the U. S. Department of Education for recognition as an "exemplary" program. In it's application, the program operators noted that they administered the Tests of Adult Basic Eduation as pre- and post-test measures. To give the adult learners the opportunity to really show what they could do, the tests were administered ignoring the time limits. Additionally, because so much improvement was typically made, the easy form of the test was generally given as the pre-test and a more difficult form as the post-test.

No one noted that by ignoring the time limits, the test was no longer "standardized," and therefore the raw scores had no meaning when converted to "grade levels." Hence adult learners were misinformed about their literacy skills. No one called attention to the fact that random marking of the easy version of the test could produce nothing less that a grade 1.0 score, while random marking of the more difficult test, frequently given as the post-test could produce nothing less than a grade 3.0 score. Hence, random marking of the different forms as pre-and post-tests could produce a gain of two years. The U. S. Department of Education designated the program as "exemplary."

The items reviewed above indicate beliefs and practices that hinder the development and implementation of programs of excellence for underserved youth and adults and their families.They illustrate widely held beliefs about human intelligence and cognitive abilities and their development that are, most simply put, wrong. They indicate that many education program providers are so untutored and inept with respect to the use of instruments such as standardized tests that, if they were practicing medicine and misused medical test instruments the way they misuse cognitive test instruments, they would be sued for malpractice.

The Need for the WELL Specialist

Many practitioners in education are somewhat disdainful of scientific research as a means of improving instructional practice. Many times this may reflect the general phenomenon that when people are not "up" on something they may be "down" on it. And many practitioners are not trained in the scientific foundations of their work.

The importance of being properly trained in the cognitive science foundations of educational practice may be best illustrated by asking a basic question with regard to another field of practice--medicine.

The question is, "Would you want to go to a physician who had never studied anatomy, physiology, or chemistry?" Of course not. These, and other disciplines form the medical science foundations of medical practice. The physician uses anatomical, physiological, and chemical knowledge in diagnosing illnesses and prescribing treatments. This knowledge is also used in reading and understanding new research studies, learning new medical techniques, and utilizing new medical instruments.

While it is true that "Dr. Mom" of TV fame can care for a number of medical problems, such as giving Tylenol for headaches, prescribing rest for a cold, and using bandaids for covering cuts, there are medical problems that go well beyond "Dr. Mom's" knowledge and which call for the medical specialist's deeper understanding and broader knowledge. No one would call upon "Dr. Mom" for brain surgery.

Current Scientific Preparation of Youth and Adult Educators. In a 1987 statewide survey, researchers in Iowa assessed the cognitive skills of a representative sample of the adults in Iowa's adult basic education programs. They found that not only were reading, mathematics and "broad cognitive" *aptitude* scores in the 5th to 10th percentile range, but actual reading, mathematics and knowledge *achievement* test scores were in the 2nd to 13th percentile ranges. By way of comparison, it should be noted that anyone who scores below the 10th percentile on the Armed Forces Qualification Test (AFQT) of reading and mathematics skills is forbidden by Congress from entering the military services.

Today, the education and training of many of our most difficult youth and adult educational problems rests largely in the hands of "Teacher Mom." Internationally known organizations recruit thousands of volunteers each year, mainly middle-aged, white ladies, to teach basic literacy and mathematics skills to undereducated learners, many of whom can officially be diagnosed as "learning disabled." Note that in the item on the Literacy Asstance Center of New York city discussed above, the learners who had spent three years in the adult literacy programs had made only about one and a half "years" of improvement. The majority of the programs reporting to the LAC rely upon volunteer or part-time teachers.In 1987, the last year for which data were available for this review, only 10.4 percent of persons working for the New York city literacy initiative were full-time.

In California, according to a personal communication with the director of adult education, there are some 20,000 teachers in adult basic education or adult secondary education, including English-as-a-Second Language programs. Only about a fourth of these teachers are full-time. And, a survey of state adult basic education teacher's credential requirements shows that over half require no special preparation or preparation only for teaching in the K-12 system. Further, the concept of lifelong learning implies an educator with an understanding not only of cognitive development across the lifespan but also from one generation to the next (to develop and deliver effective family literacy and other parenting programs) and this goes well beyond traditional adult education certification or degree programs.

Because all humans are natural learners and teachers to some extent, most of these educational providers have some intuitive understanding of how to teach, and they record a modicum of success. However, as the various items identified above indicate, the intuitive teacher is frequently not up to the more demanding tasks of educating and training to high levels youth and adults from various cultural, linguistic and educational backgrounds situated in various institutional settings such as the military, corrections, job training programs, workplaces, and so forth.

The vast majority of administrators, program developers, and teachers in programs for youth and adult education education have no professional education in the **cognitive science foundations of educational practice** that are analogous to the medical science foundations of medical practice.

Limitations in Staff Development Due to Lack of Cognitive Science Foundations. Because they have no general theoretical framework for understanding cognition and its development, many adult educators participate in staff development efforts without the knowledge of cognition and learning that they need to evaluate the veracity of what they are being taught and to understand when and how they might use this new information. Perusal of the offerings in staff development across the nation's adult basic education programs reveals what can only be called a *potpourri* of topics such as whole language, teaching adults with special needs, critical thinking, learning styles for adults, counseling, workplace literacy, phonics, learning disabilities, visual therapy, home-based education, ESL, multicultural education, scotopic sensitivity, whole brain learning (?), etc.

One thing that cognitive scientists have established is that the learning of disparate and somewhat esoteric topics such as those listed above requires a pre-existing framework of knowledge that can be used to evaluate the value of new information, interrelate the various special topics and construct new bodies of knowledge usable in future contexts. For many who participate in staff development programs, their learning must rely upon experiential knowledge from their daily practice and this will frequently not be codified into a coherent and validated body of knowledge relevant to what they are expected to learn in staff development workshops. Consequently they must often fall back upon rote methods of learning rather than methods promoting deeper understanding because they are almost totally lacking in coherent, theoretically codified and empirically verified discipline knowledge from the cognitive sciences that would help them understand their practical experience, the workshop information, and how the two bodies of knowledge interrelate.

Finally, it should be noted that one of the major benefits of a sound body of conceptual or theoretical knowledge is not that it will "Tell me what to do in class Monday evening."

Rather, such knowledge may have its largest payoff in permitting better judgments about what *not* to do in a given educational situation. For instance, the item regarding the large investment of a major corporation in basic skills progams that promised a "year's" growth in ten hours and had little or no established relationship to the workforce's needs would have been a different tale had any of the human resource and training specialists in the corporation been educated to understand cognition and literacy development in undereducated adults. The statement has been attributed to Professor Jerome Bruner, one of the founders of cognitive science and a leader in applying theoretical knowledge to education, that "There is nothing so eminently useful as a good theory."

A Design for a WELLS Curriculum

The foregoing clearly indicate the need for workforce education and lifelong learning specialists who are professionally educated and trained to engage in their educational practice. While the exact contents and methods of a new curriculum for preparing WELL specialists is an extensive task, and must be determined in curriculum development activities, a broad conception of the contents of a WELLS curriculum is presented in Table 2.

Table 2

Domains of knowledge and skill for the Workforce Education and Lifelong Learning Specialist (WELLS).

Cognitive Science Foundations of Education	Educational Arts and Technology	Culture and Human Resources Policies and Practices
Develops an understanding of human growth and cognitive development within a framework based on research from studies in anthropology, sociology, psychology, linguistics, philosophy, and computer sciences. Integrates biological, cultural & social foundations of cognition and the intergenerational transfer of cognitive abilities (knowledge; thinking skills); oral and written language; graphic tools of thought; academic bodies of knowledge (math; science; history; geography; etc.) workforce bodies of knowledge; and the applications of knowledge in the everyday world. Develops an integrated understanding of learning in childhood and adulthood as influenced by culture and other context factors.	Develops competence in using a variety of problem solving methods (including qualitative and quantitative research methods); technologies for instructional development, delivery & evaluation; methods for teaching basic academic skills, workforce skills, personal management skills in various contexts; multicultural education for ethnic, gender, age and organizational diversity; learner-centered, participatory education methods for empowering youth and adults in the education process; aiding the teacher as enquirer in action research to improve the delivery of education programs; managing informal and incidental learning.	Develops an understanding of cultural beliefs about cognitive development and how these beliefs are translated into policies and practices; federal state, and local policies and laws regarding various funding "streams" such as the Job Training Partnership Act (JTPA) the Family Support Act and JOBS; the Adult Education Act, etc. and how to obtain funding for programs from these sources. Methods of work analysis to establish cognitive, social, and technical skills for work for counseling youth and adults for employment and for curriculum development. The cultures of various work organizations and organizational development. Methods for community development.

The curriculum design was synthesized from (1) consideration of duties that a WELLS might perform in various organizational settings, (2) review of the current offerings of adult education degree programs (3) study of offerings in staff development for adult basic education and English as a Second Language specialists, (4) conceptions of the social and cognitive skills required for work by the Commission on the Skills of the American Workforce, the Secretary's Commission on Achieving Necessary Skills, the National Advisory Commission on Work-Based Learning, (5) visits to and discussions with managers and trainers at a variety of work

organizations, including Motorola, Kodak, Aetna, Briggs & Stratton, Remmele Engineering, the Federal Reserve Bank of Boston, and the NYNEX telephone company, (6) examination of two volumes of papers from a national conference on the intergenerational transfer of cognitive skills convened by the Applied Behavioral & Cognitive Sciences, Inc. in 1988, (7) discussions with youth and adult educators, instructional technologists, policy makers in human resources development, and cognitive scientists, (8) discussions with faculty, staff and graduate students at San Diego State University, College of Education and faculty and staff of the San Diego Community College District, Continuing Education system; (9) review of contemporary research from the cognitive sciences on learning in the home, community, school and workplace, and (10) review of the report of the California Workforce Literacy Task Force and the supporting papers prepared for the Task Force.

The Empowerment Philosophy. An important and pivotal finding from the review of cognitive science, discussions with educators, government policymakers, and the managment and staff of the workplaces visited is the emergence of what we call the philosophy of empowerment. In the new, high performance workplaces, the aim is to empower line workers to take over a greater responsibility for their work and that of their peers. This means changing line workers from "cogs" in an assembly line, to decision makers and planners in a collaborative work team. For government policymakers, such as the Secretary's Commission on Achieving Necessary Skills, the empowerment philosophy of the high performance workplaces holds promise for changing schools into high performance schoolplaces, where students learn collaboratively and teachers share decision making and planning activities with administrators.

Educators and cognitive scientists have viewed empowerment from an educational benefits perspective as opposed to a deficit perspective. That is, it is now widely recognized that considering underserved, less well educated children, youth or adults as being deficient in some ability or as having a deficit in some skill promotes an approach to education that is remedial and compensatory. For youth and adults, it too often leads to so-called "second chance" programs that are actually "second rate." However, in an empowering educational program, the educator approaches education from a developmental perspective in which the learner is considered as possessing culturally determined, prior knowledge and skills that are built on to achieve new educational benefits for the person, rather than as overcoming some personal deficit.

Following the empowerment philosophy, the WELLS values and integrates the language, culture and social contexts of the learners into educational programs. The WELLS curriculum will educate and train educators to better understand cognitive development and learning across the lifespan in order to be better designers and providers of workforce education and lifelong learning programs. Educators with this competence will be better consumers of programs for youth and adults, and will better understand the policies that give rise to funding for educational programs so they can obtain adequate funding for programs.

The complete documentation of the knowledge and skills that should be developed in each of the three domains listed in Table 2 is beyond the scope of the present project. Therefore, the following discussion of each of the three domains does not attempt to spell-out in detail what should be taught in each domain. Rather, for each of the three domains there is a discussion about why the domain knowledge and skill is important for those who will work as workforce education and lifelong learning specialists.

Cognitive Science Foundations of Education

Definition: Cognition; Cognitive (adjective): 1) the mental process or faculty by which knowledge is acquired; (2) that which comes to be known as through perception, reasoning or intuition; knowledge. American Heritage Dictionary, 1976.

The field of Cognitive Science is concerned with the study of the human mind and how it acquires and uses knowledge in perceiving, attending, learning, remembering, imagining, thinking and languaging. It is a relatively new multidisciplinary field of study that includes research in anthropology, sociology, psychology , neuroscience, computer science, philosophy, and linguistics.

Because of the extensive information available across the various cognitive sciences, and the limited time available in a two-year professional degree program, in the WELLS curriculum a new synthesis of findings will be needed that provides a concise and coherent summary of the interactions of biological, social, and cultural factors contributing to the lifelong learning and development of cognitive skills (see Table 2 for an overview of some of the important concepts from the cognitive sciences that should be considered for incorporation into the WELLS curriculum). Given the ethnic diversity of the population that the WELLS will serve, it will be particularly important for the WELLS to construct a thorough understanding of the cultural and social factors that influence cognitive development and learning.

An Active, Constructivist Approach to Learning. The construction by the WELLS learner of a meaningful and useful knowledge base regarding human cognition and the factors that influence its development and use requires that the curriculum direct the WELLS learner to convince himself or herself of the veracity of cognitive science methods and findings. Similar to the procedures followed in studying physics, physiology, and other sciences, the WELLS learner should replicate studies that have been conducted in the cognitive sciences that have lead to the existing corpus of discipline knowledge. For instance, the WELLS learner should replicate anthropological, ethnographic studies that have revealed the role of cultural practices in shaping cognitive processes and contents. Additionally, experiments from psychology that illustrate the workings of separate aspects of memory, such as working and long term memory, and other information processing tasks that reveal the nature of the *human cognitive system* and its development over the lifespan should be replicated. There are computer labs available today that can be used for these exercises.

Other studies should be replicated that illustrate key methods and findings from sociology, such as the study of in-groups and out-groups and the formation of social capital, concepts of phonemes in linguistics that can be useful in understanding literacy development, and problems of the representation of knowledge in computer science. Thoughout all these studies, the WELLS learner should learn the basics of reasoning, problem definition, measurement, interpretation, and reporting of findings that undergird all scientifc study, including the cognitive sciences. Attempts to formulate problems in ways that lead to rigorous measurement and quantification of phenomenon can develop a healthy respect for the difficulties in measuring the growth of cognitive skills, including the "basic skills" of reading, writing, and mathematics. This is useful in understanding both the merits and limitations to testing and assessment schemes in education.

For underserved youth and adult learners, it is critical that the WELLS develop an understanding of and sensitivity to the socio-psychological factors that underlie the stresses and strains that befall many who grow up without achieving well in our society.

There is frequently shame and embarrassment that make it difficult for youth and adults to seek education. Frequently the less literate and undereducated have formed extensive social networks that maintain them in their present state of undereducation. The move to get education may create a breakdown of social relationships, and this can cause severe anxiety that interferes with learning skills development. The WELLS must be aware of these social- and psychodynamics and their influences on educational growth and development across the lifespan.

Content Oriented Learning Theory. One of the features of much of the education about adults is that it deals with learning as though *all* learning is the same. For instance, it deals with general principles such as helping the adult learner become a self-directed learner, or learning in reaction to significant transitions (e. g, death in the family; divorce) in life and so forth.

However, there is sufficient research in the cognitive sciences to understand that the learning of particular skills, such as reading and writing, requires a specific understanding of what is to be learned as well as how learning proceeds in different instructional contexts. Similarly, learning of subject matter such as science, history, etc, requires a specific learning theory.

To prepare the WELLS for developing instructional programs in literacy, mathematics, GED (science, literature, history), and vocational subjects, a special synthesis of research on content-oriented cognitive processes and learning needs to be developed. This is not to say that the WELLS must be a specialist in all these areas. But the WELLS should be able to communicate knowledgeably with teachers and other subject matter experts in these fields to engage in curriculum development activities. This part of the WELLS curriculum serves as a bridge between the more theoretical and conceptual cognitive science foundations of education, and the world of educational practice discussed next.

Educational Arts and Technology

Educational practice is a combination of art and technology. In the WELLS curriculum, the artistic components of practice should be developed by working on authentic educational problems in youth and adult educational settings. For this purpose, Chapter 3 describes a concept of the WELL Action Research Center and Community (ARC).

Instructional Systems Development (ISD). Within this community context, the WELLS should encounter challenging problems in the context of which she or he would study and apply instructional systems development (ISD) technology of problem defining, context, task, and content analysis, educational program design, curriculum development, program implementation and evaluation. Of course, as an integral part of the ISD systems approach, the WELLS will need to develop a sound understanding of methods of assessment for accountability at various levels of education: the individual, group, organizational, state and federal. New emphases upon national standards, certification of mastery of skills for work, and the role of assessment in educational reform must be a part of the WELLS knowledge base.

Problem Solving. The WELLS must learn a variety of techniques that are useful in defining and solving problems. This includes a practical, applied understanding of processes such as goal-setting and means-end analysis, as well as the use of various graphic techniques (tree-structures; flow-charts; Venn diagrams; semantic networks; tables and charts-particularly those used in statistical quality control processes in high performance work places; spread sheets, and planning devices such as Pert charts and other forms of graphic displays of time, activities and milestones). The use of various computer software packages for executing these types of problem defining and solving technologies should be learned.

Of course, research methods, both qualitative and quantitative, are generally useful methods for defining and solving problems. The WELLS should develop skills in literature search, review and evaluation of research studies, design, execution, and reporting of research studies. Competence in this area would be developed both in the replication of cognitive science studies discussed earlier and in the practicum work in the WELL ARC (Action Research Center).

Educational Technology. The diversity of settings and needs of youth and adult learners poses a special problem in the development of instructional programs and an effective delivery system. Adult learners may need to learn at home, in the workplace, in special community-based organizations on weekends or nights or whenever their time permits. Further, any given program may encounter learners possessing widely differing entering abilities and the desire for a wide variety of instructional programs, from basic academic skills to college preparation for the Scholastic Aptitude Tests. More and more, the solutions to these delivery system problems will involve the use of high technology. Therefore, any WELLS curriculum must include the development of skills and knowledge in the design, development and use of computer-aided instruction. The WELLS must acquire basic competence in the use of authoring systems and interactive media systems for curriculum development. Telecommunications for distance learning may play a considerable role in reaching youth and adult learners. For this reason, **any college of education that intends to prepare WELL Specialists must have the capacity for providing high quality instruction in educational technology.**

Multicultural Education. The WELLS will encounter considerable ethnic and linguistic diversity in the various settings in which he or she may work. This is particularly true for those WELLS working in English-as-a-Second Language (ESL) programs. There are cultural factors of both the people and the settings that must be understood by the WELLS. For instance, regarding multicultural settings, the cultures of community colleges and other educational settings are quite different from those of industrial workplaces. Further, the cultures of high technology, high performance workplaces are different from those of more traditional workplaces.

A variety of *problem solving, teaching and learning strategies* that are sensitive to these person and setting, multicultural factors must be learned by the WELLS. In some settings, it may be appropriate for adult learners to be engaged in developing their own learning objectives and curriculum materials and setting their own pace for learning. In others, because of limited time and the needs of the particular workplace, learner participation may be limited to the decision as to whether to participate or not in the educational program. But the content, nature, and pacing of the curriculm may be determined by the needs of the workplace and work tasks. In yet other settings, e.g., the military, the learner may have nothing to say about whether to participate or not , what the curriculum will cover, and how long the program will be. The WELLS needs to be adaptable to these various organizational, cultural contexts.

Content Instruction (Reading, Writing, Mathematics, Academic & Occupational Subjects). Though the WELLS cannot be a specialist in all the content areas that might be of importance for youth and adults, there is a need for the WELLS to have a familiarity with instructional program development in the basic academic content areas. Additionally, because of the workforce focus of the WELLS, the curriculum must develop skills and knowledge about the world of work and the development of instructional programs for learning occupational skills. The Secretary's Commission on Achieving Necessary Skills (SCANS) has identified a number of "higher order" competences that learners wishing to work in high performance work places should acquire. The WELLS must be familiar with the types of analyses of work requirements that the SCANS and other groups produce, and how to use this information to develop programs of instruction that are suitable for undereducated youth and adults. This may involve the use of *functional context* educational concepts and methods for integrating basic skills and occupational skills instruction.

The functional context approach to educational development takes a *learner-centered, participatory* approach in which the instructional developer attends carefully to the wishes, wants, desires, and needs of the learners and engages the learners in participating in developing their own realistic goals and means to achieve their goals. An understanding of the socio- psychodynamics of youth and adult learners, as discussed above, is important in understanding and responding to the motivation of youth and adults for participating in educational activities.This includes understanding the academic risk-taking propensities of many youth and adults, their attribution of cause and effect and who or what has control over which aspects of their lives. Cases of learned helplessness are frequently encountered in lower achieving learners and the WELLS must be prepared to assist learners in overcoming these negative socio-psychological beliefs and attitudes.

Teacher as Enquirer/Researcher. One of the major activities that the WELLS can expect to engage in is staff development of teachers (and others involved in the educational enterprise) in various youth and adult programs. In this regard, one of the more important approaches to staff development engages the teachers as enquirers - as researchers in their own classrooms and communities. Chapter 3 discusses the concept of the teacher as enquirer in greater detail. The WELLS curriculum should include activities in which the WELLS serves a practicum as both a teacher/enquirer and a facilitator of staff development that incorporates the teacher as enquirer approach.

Managing Informal and Incidental Learning. Much of the learning that youth and adults engage in takes place in settings outside the schoolhouse. In the community, youth learn attitudes and form beliefs about themselves, their abilities, and their place in society largely from the physical nature of the community, the social networks with which they interact, and the communications media. In workplaces, on-the-job learning is a potent source of attitudinal, knowledge and cognitive skills development. The WELLS needs to understand the nature of informal and incidental learning to participate in developing programs that promote the "learning community." Much of this can be learned through the replication of anthropological studies of the formation and uses of cognition in "everyday" or "real life" (as contrasted to schools), as discussed above.

Cultural and Human Resources Policies and Practices

The third domain of competence for the WELLS is concerned with the development of understandings of cultural beliefs and how those beliefs are transformed into educational policies and programs. For instance, the belief that "Half of adult intellectual capacity is already present by age 4 and 80 percent by age 8," discussed above, is largely

responsible for the federal policies leading to the proposed spending of over ten billion dollars in the coming year for Head Start and Chapter 1 early childhood compensatory education. Such widespread beliefs are part of our cutural beliefs about human cognitive development, and, indeed, there are numerous cognitive scientists today who suscribe to the ideas of "general intelligence," or "G" as it may be called, that is largely determined by genetic endowment.

Such beliefs may be expressed in folk knowledge through sayings such as, "You can't teach an old dog new tricks." More importantly, however, they may be translated into policies by policymakers in government or various organizational settings may use them to justify restrictive funding (federal funding of adult basic and secondary education is less than one-half of one percent of that for early childhood compensatory education - even though such education is largely compensating for the educational problems of the children's parents!).

The WELLS needs to understand cultural beliefs about human cognitive development and how such beliefs are translated via policies expressed as laws that create various funding "streams" for those wishing to provide educational services to youth and adults. The WELLS must be knowledgeable of federal and state laws and categorical funding programs (Family Support Act and JOBS; Job Training Partnership Act; Adult Education Act; etc) that can be drawn on to secure funding for youth and adult programs. They must obtain practice in evaluating and preparing proposals in response to requests for proposals from various agencies.

Human Resources Practices. To prepare youth and adult learners for work in various occupational contexts, the WELLS must be competent in the analysis of work to determine cognitive, interpersonal, and occupational skills and knowledge required for work. The products of such analyses are used in the design of workplace literacy and other types of job-related programs. They can be used in the development of job counseling methods.

The WELLS must learn the various "cultures of work" that youth and adult learners encounter in various work settings. The normative ways of behavior, the role relations among men and women, novices and experts, employees and supervisors, and so forth influence the types of social competence that the WELLS must promote in the youth and adults with whom she or he works.The WELLS should study the functions that organizations perform, such as recruitment, selection, assignment to work, training, job design, performance appraisal, productivity assessment, promotion, discipline, and separation from work. This study should include methods for improving the effectiveness of these functions with the aim of developing more effective organizations with improved human resources practices.

Community Development. The WELLS will be working within the context of the AMERICA 2000 strategy for the next decade or so. Track IV of AMERICA 2000 calls for the development of "learning communities." The WELLS must receive training and experience in working within communities characterized by the presence of large numbers of underserved youth and adults. Techniques for promoting cooperation, partnerships, and civil actions must be acquired. This skill and knowledge can be developed within the context of the WELL Action Research Center discussed in Chapter 3.

Developing the WELLS Curriculum

Obviously, there is enough of value for the WELLS to learn in the cognitive sciences, educational arts and technology, and cultural and human resources policies and practices domains to require a ten year, 300 credit course of study! Therefore, there is a need for a special curriculum development activity that can synthesize the most important concepts and methods from the fields in these domains and construct a curriculum that can efficiently educate and train the WELLS in these domains within the time limits of traditional graduate programs.

An approach to curriculum development that can help to reduce the time needed to learn vast domains of knowledge is to follow *functional context* principles for integrating the learning of separate domains of abstract skill and knowledge into meaningful action scenarios. For instance, working within the scenario of the need to develop a parenting program for working parents, the WELLS may study the cognitive science literature related to childhood cognitive development, the literature on workplace literacy development for adults, and design a curriculum that integrates teachers, books, computers and peer instruction for delivery to adults at their worksites. This would require the WELLS to learn within the cognitive science, educational technology, and culture and human resources practices domains in a constructive, meaningful, integrated manner.

Faculty Commitment

To *implement* the development of the WELLS curriculum design presented here is a large undertaking. The development of a new professional educators degree and curriculum rests, in the final analysis, on the commitment of the faculty of any school of education that wishes to become engaged in the challenges of the contemporary international and national educational and economic scene. The decisions as to whether such a new degree is actually needed, what to teach, how to teach, who will teach and who the students will be all rest, in the final analysis, with the faculty.

Policymakers from the President to the Congress, and from Governors to state legislatures, and from public to private enterprises have joined forces to forge a new understanding of the importance of the education of non-college bound youth and adults to the quality of life in our nation. The opportunity is here, now, for colleges of education to engage the talent of their faculties to the preparation of professional educators who can ensure quality education and training for those who have traditionally been underserved - the non-college bound youth and adults who make-up the majority of America's parents, workers, and citizens.

Chapter 3

The WELL Action Research Center and Community

The Workforce Education and Lifelong Learning (WELL) professional education program begins with the state of the art in knowledge about workforce education and lifelong learning. However, to improve on present knowledge and to develop skill in applying what is learned in the education program, the WELL Specialist will participate in a practicum in an Action Research Center. This chapter first reviews the concept of "action research" and generally why it is an appropriate approach to both the training of a WELL Specialist and to the improvement of workforce education and lifelong learning. This is followed by the current national scene in adult literacy research, a description of an Action Research Center (ARC) Community to provide a context for the conduct of action research, and a tentative research agenda for the ARC.

Research-based knowledge is essential for designing and implementing effective workforce education and lifelong learning opportunities for underserved youth and adults. Existing education and training programs, however, offer limited data of high scientific quality and value. This research data is largely experienced-based and therefore not generalizable to individual programs. In addition, the data is oftentimes not readily accessible by interested practitioners and researchers. This lack of usable research knowledge is one of the main factors limiting the effectiveness of the current delivery system to meet the changing needs and demands of the workplace.[1]

Empirical data is important for several reasons. In adult education and training programs, qualitative and quantitative research can provide the knowledge foundation for the development of more effective professional growth opportunities. To a great extent, current staff development programs lack this research component and thus have had only a marginal impact in improving service delivery.[2] Research can also play a major role in the development of training materials to enhance student achievement, as well as to improve program documentation and accountability. Within a designated educational and geographic context, implementing the principles of action research will not only produce positive effects for teachers and learners, but ultimately it will have a profound impact for developing a "learning community" as advocated in the America 2000 Strategy.

Need for Action Research

The action research concept views research as essential to the development of more effective action programs. By bridging the gap between theory and practice, action research in an educational setting facilitates communication between practitioners and researchers, producing a mutually beneficial exchange of information and ideas. This level of collaborative interaction has traditionally been lacking in the adult education and training delivery system. As a consequence, no action research centers dealing primarily with enhancing workforce education and lifelong learning opportunities for underserved youth and adults exist in the United States.

The proposed action research project will study the cognitive development of learner populations specifically with regard to their contexts (i.e. geographical location, socioeconomic status, language and cultural backgrounds, etc.). The need for action research is obvious. Most practitioners either lack a comprehensive understanding of

cognitive learning theory or are too busy making programs work to be able to generate discipline-based knowledge. In addition, most researchers are too far removed from practice to grasp an individual's learning needs from a practitioner's point of view. Implementing action research techniques therefore has the potential to foster long-term program improvement.

Action research is an open-ended and cyclical, not outcome-oriented, process. The research framework consists of a series of steps that practitioners and researchers may follow:

- Problem analysis
- Data collection
- Data analysis and conceptualization
- Planning of an action program
- Implementation of the action program
- Evaluation

The proposed Workforce Education and Lifelong Learning Specialist (WELL) project is unique in that it combines action research techniques applied towards the study of adult learning, within a designated community, with a professional degree program that will train educators to work within that community (and others, too). In addition to providing a more contextualized understanding of research issues universal to education and training programs, an action research center will produce scientific knowledge of greater use to individual programs and provide a practicum setting where the WELL Specialist may receive hands-on training working directly with residents of the ARC community. The symbiotic relationship of the WELLS professional degree program and the WELL Action Research Center project will be elaborated at the end of the chapter.

Action Research and the Dissemination of Knowledge

Current research efforts are widespread, varied and produce considerable data not necessarily generalizable to individual education and training programs. Research institutes like the National Center on Adult Literacy (NCAL), the United States Department of Education/Division of Adult Education and Literacy (USDE/DAEL), and the newly-established National Institute for Literacy (NIL) typically conduct two types of research. In some instances, they study a specific research problem at one specific site. In other cases, they collect sample data from adult education and training programs located throughout the country. Despite a myriad of national and state-level research institutes currently in operation, their production of knowledge has not been disseminated effectively, such that individual school sites may utilize and incorporate the findings into their own programs.

This lack of research generalizability results primarily because learning is contextualized. National studies cannot thoroughly address the many differences that distinguish individual programs from one another, such as geographic region, varied ethnic and cultural backgrounds of student populations, services provided and community influences. This problem may be remedied, however, by studying the same research questions within a more localized and manageable setting. This contextualized method of research embodies the fundamentals of action research where, implemented within a specific community, national issues may be more effectively addressed. In addition, the information gained will prove more useful for program improvement.

Accessibility of data and research findings is another major factor limiting the dissemination of research-based knowledge. Practitioners rarely have the time and the resources to browse through a nationwide database for relevant information that may apply to their individual student population or program. In addition, service providers cannot always locate, understand and extract information from studies to incorporate into their programs. Data collected through action research within an educational institution, however, is very accessible to interested practitioners and researchers.

In summary, research-based knowledge is most useful at the community level. Data obtained from national studies is difficult to access and oftentimes not relevant for individual program improvement. Instead, obtaining student and program data through action research techniques, within a designated context, holds considerably more potential for improving the existing service delivery system rather than extending current national research activities. Using action research, the collection and dissemination of knowledge within a given community is more meaningful for individual service providers within that community. Of course, knowledge gained within one community may have utility for others. Therefore, action research can provide double benefits: it can help solve local problems while contributing to the national knowledge base about workforce education and lifelong learning.

Action Research and Professional Development

Enhancing professional development opportunities is another key outcome of implementing action research techniques within an educational setting. According to Glatthorn, professional development in education involves a compilation of the following peer-centered options: professional dialogue (involving joint reflection about teaching), curriculum development (including the collaborative production of materials), peer supervision (the collegial analysis of teaching), and peer coaching (the supported acquisition and mastery of skills). To a great extent, action research includes all of these options and more.[3] Action research is therefore a powerful professional growth tool for adult educators. It promotes a process-oriented approach to educational change by integrating problem solving with ongoing inquiry.

Educational change is ultimately dependent on change in individual teachers. Action research promotes the development of the teacher in a variety of different capacities, including inquirer, researcher, lifelong learner, innovator, evaluator, and change agent. Within the classroom, teachers take ownership of the change process by defining their own problems, formulating their own research questions, and identifying the procedures by which to engage in problem solving activities. Information gained through the collaborative inquiry process allows the reflective teacher/researcher to evaluate effectively his or her current curriculum and instructional practices, then identify areas for improvement. The teacher may gain research-based knowledge through reading, observing, reflecting, and sharing information with other teachers. Case study methods include observations, field notes, teacher and pupil journals, interviews, and surveys.

This reflection process takes time to develop as it requires the knowledge, skill, and disposition of reflective practice. An action research center would assist in transforming teachers into reflective practitioners. The reflective practitioner must learn what questions to ask, how to ask them, and what to do with that information once he or she has generated hypotheses. Once attained, however, this level of reflective thinking empowers the teacher and builds leadership skills. It also provides a means for increased dialogue, collaboration, and support amongst adult educators. Even more important, the action research approach and philosophy produces increased interest, documentation, and accountability from the teacher, which ultimately results in better classroom instruction for the learner.

Through improved classroom instruction, action research will ultimately affect the surrounding community and the attitudes of its residents towards education, and promote learning within this community. Reflective teachers are more knowledgeable about and responsive to learner needs, therefore providing more relevant instruction and assessment. Students may attend class more regularly, thus improving student motivation, participation and retention. Students can, in turn, relay their positive experiences to others within the community who previously may have avoided the educational system. This link to the community is more effective than any organized community educational development

process. Thus action research not only has an impact as a major professional development activity, it also has the potential to generate and sustain significant improvement in educational programs as schools of inquiry, as well as promote the development of learning communities.

Some schools may claim that they are already conducting action research. Typically their Research and Planning Department collects and analyzes data for future use. To a great extent, however, information is collected study by study and the data are not used to provide a broader, more general picture of the educational environment. Action research differs from research and planning by constantly building a body of knowledge. This body of knowledge informs the educators and administrators to effect program change where necessary. Action research may therefore become a "tool of continuing education" to improve workforce education and lifelong learning opportunities in a specified context.

Action Research in a National Perspective

The growth of adult literacy education has resulted in the incursion of a large number of policy-oriented researchers into the field of adult literacy research who are evaluating these various federal programs, and the establishment of several centers for adult literacy research, including the first federally-funded national center for adult literacy research. This section provides a brief overview of the contemporary national scene in adult literacy research. A major purpose for this review is to illustrate the large amount of information that will be generated by these various federal activities in adult education and to note just how difficult it is for a community to know about this information and to be able to use it in solving local problems. An ARC can help bridge the information "gap" between national research centers and projects and the needs of the local community (See Table 1).

Table 1

Research and Application Programs of the National Center on Adult Literacy (NCAL); U. S. Department of Education, Division of Adult Education and Literacy (USDE); and the National Institute for Literacy (NIL).

NCAL	USDE	NIL
• Participation and service delivery	• Effective practices and programs	• Basic & Applied R & D
• Learning and Instruction	• National Impact Studies	• Technical Assistance
• Impact and Policy	• Descriptive Studies	• Evaluation of policy
• Technical Assistance	• Technical Assistance	

Research Agenda of the National Center on Adult Literacy (NCAL)

The NCAL was funded in 1990 for five years at about $1.5 million per year. It is a consortium of many different organizations whose work is organized under four main issues and problems for the field of adult literacy. Key questions asked by the NCAL under the three main research areas are:

Participation and Service Delivery

1. Why are participation and retention rates so low for adult literacy programs?
2. How can adult literacy programs be made more effective?

3. How do service delivery factors such as teacher recruitment and professionalism, staff development, student assessment and management influence participation and retention?
4. How can information about adult literacy services be made more accessible to those who need it?

Learning and Instruction

1. How are literacy skills acquired by adults?
2. How do cross linguistic factors affect adult literacy learning?
3. How does numeracy develop in adults?
4. How can learning by adults with special needs be enhanced?
5. Under what conditions is literacy ability not retained?
6. How can technology be used to facilitate/improve the range of adult literacy activities including new instructional methods, on-line assessment, database manipulation, assistive devices, and dissemination management? (There is a Technology Development Unit at NCAL.)

Impact and Policy

1. What impact does improved literacy ability have for learners, their families, their communities, and the workplace?
2. How do state and federal policies in education, labor, and health and human services affect the implementation and effectiveness of adult literacy programs?

Research Program of the U.S. Department of Education/Division of Adult Education and Literacy (USDE/DAEL)

The U.S. Department of Education, Division of Adult Education and Literacy conducts a $3 million program of Research and Development aimed at policy and service delivery improvement, mostly through contracts and grants to consulting firms or individuals. This program roughly parallels that of the NCAL, though the categories of inquiry are not completely identical. The following studies were in progress or had been completed as of June 1991 (U.S. Department of Education, 1991):

Descriptive Studies

1. Resources for the adult migrant farm worker program.
2. Case studies of local adult education programs.
3. Description of adult education instruction-teacher training and curriculum materials.
4. Analysis of data from the National Assessment of Educational Progress' (NAEP) Young Adult Survey.
5. Review of adult education data systems.
6. National Adult Literacy Survey.
7. Joint study of federal funding sources and services for adult education programs.
8. Review of the workplace literacy partnership program.
9. National volunteer organizations review.

Effective Practices & Programs

1. Field-initiated research in adult education:

- Developing literacy through whole language in ABE (whole language versus individualized instruction with workbooks).

- A comparative study of adult education (classrooms versus computer instruction)
- Project PROVE: Probationers/Parollees Realize Opportunities Via Education.
- Older displaced workers write to read.
- Computer speech devices for adult literacy skills.
- Research in education for adult literacy (micro-computers versus LVA & Laubach).

2. Small business innovation research program:
   - The Ready Course, an interactive videodisc assisted reading program.
   - Incorporating audio support into English composition CAI for adult education learners.

3. ABE/ESL teacher training project (current practice in ABE/ESL instructor training & model programs for dissemination).

National Impact Studies

1. National evaluation of adult education programs (longitudinal survey of representative sample of adult education participants and program descriptions and assessments).

2. JOBS evaluation, adult education study (uses random assignments to determine the effects of JOBS in selected sites with adult education programs).

3. Adult education programs facts (this is a compilation of descriptive statistics from the states regarding enrollments, demographics, funds expended, outcomes, etc.)

Programs of the National Institute for Literacy (NIL)

In July 1991, the President signed Public Law 102-73 which provides for a wide range of activities, including research, technical assistance, and information dissemination. The law also establishes the National Institute for Literacy. Although the exact programs of the NIL are not yet formulated, the law calls for the Institute to conduct basic and applied research and demonstrations. Among the questions to be addressed are:

1. How do adults learn to read and write and acquire other skills (listening, speaking, reasoning, etc.)?
2. How does the literacy level of the parents affect the skills development and schooling of the parent's children?
3. What are better ways to assess literacy skills?
4. How can better instructional programs be developed?
5. What are good methods for assisting adults and families acquire literacy skills, including the use of technology; methods for adults with special learning needs (learning disabilities), and limited English proficient (LEP) adults?
6. How can the most disadvantaged be effectively reached and taught literacy skills?
7. How can technology be used to instruct and to increase the knowledge base?
8. How can research efforts of others be built on?
9. How can the field attract, train and retrain professional and volunteer teachers?

In addition to these questions, the NIL will assist federal, state, and local government entities in developing sound policies, programs and practices for improving the quality and delivery of adult literacy services.

The Action Research Center Community

The proposed WELL Action Research Center would cater to one of the most underserved areas within San Diego. The community boundaries surround four San Diego Community College (SDCCD) Continuing Education sites: Centre City, Mid-City Center, Educational Cultural Complex, and Harbor View; and San Diego State University. This area lies within three sub-regional areas: Mid-City, Southeast San Diego, and Central San Diego. Specific communities include Downtown, East San Diego, Golden Hill, Logan Heights, Mid-City, North Park, San Diego State University area, and Southeast San Diego. In nearly all demographic characteristics, the ARC community differs considerably from the rest of San Diego (see Figure 1).[4]

According to 1990 Census tract data, the ARC community is more ethnically diverse than the San Diego region. The self-reported racial composition of the nearly 2.5 million residents in San Diego was 75 percent White, 6 percent African-American, 8 percent Asian, and 10 percent Other. Twenty percent were of Hispanic origin. The ARC community, almost 212,800 people, consisted of 42 percent White, 21 percent African-American, 10 percent Asian, and 27 percent Other. Forty-one percent were of Hispanic origin.[5] This ethnic diversity is due in part to the growing refugee population moving into the ARC community. For one refugee agency, approximately seventy-five percent of the refugees are Southeast Asian, with the majority being from Vietnam (90%), Laos (Hmong and Lao), and Cambodia. The remaining 25 percent of the refugees arrive from the Middle East (Afghanistan, Iran, Iraq), Europe (Poland, Czechoslovakia, Albania, Bulgaria, Armenia), Africa (Ethiopia, Somalia, S. Africa, Zaire, Angola, Mozambique).[6]

The estimated 1990 median income for residents of the ARC community is the lowest in San Diego. The average median household income (1989 dollars) was approximately $20,300, while that for the San Diego region excluding the ARC was $38,665. Median income is defined as the middle of the rank indexing of income, i.e. 50 percent of the household incomes are higher than the median and 50 percent are lower. Fifty-one percent of the ARC household incomes were under $20,000, 63 percent under $25,000, and 79 percent under $35,000. For San Diego, 25 percent were under $20,000, 35 percent under $25,000 and 52 percent under $35,000. Parts of the ARC community experienced the strongest decline in real mean household income since 1980.[7]

The ARC community has among the highest crime rates (rape, burglary, and assault) in the County. This may be due in part to the generally urbanized and compact conditions characterizing the area. Residents in the ARC community average 2.9 people to a household, compared to 2.6 for San Diego.[8] The standard of living in the ARC community is also somewhat lower. ARC residents receive more public assistance (AFDC, Food Stamps, General Relief) and have a higher percentage of residents near or below the poverty level than the San Diego region. Welfare dependency in this community is twice the average and receipt of Supplemental Security Income (SSI) is the highest in the county.[9]

Despite the variety of demographic changes during the last ten years, the educational breakdown in these areas remains fairly stable. The educational attainment of the ARC community residents is lower than San Diego, as indicated by the number of persons not completing high school in 1980: ARC community (27.7%) compared to San Diego (21.9%).[10] According to the San Diego Unified School District, Hispanics were most likely to drop out of school (40%), followed by Indochinese (30%), African American

Figure 1.
The Action Research Center (ARC) Community

Services provided to the ARC Community:

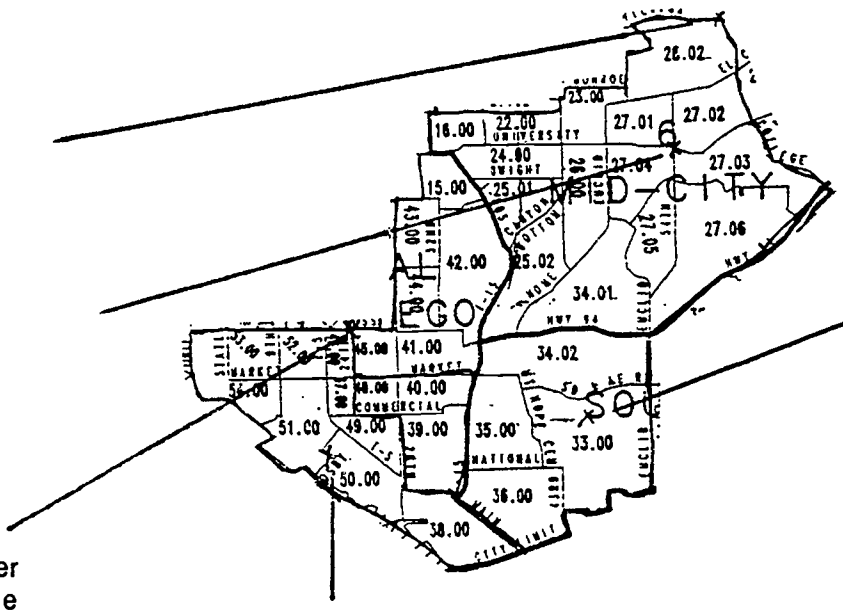
Targeted population		Targeted Services	
Low income	40%	Employment/Training	31%
Families/Women/Children	38	Education	27
Youth/Delinquent	27	Substance Abuse	23
Ethnic Groups	20	Emergency Services	23
Homeless	16	Recreation	13
Senior Citizens	12	Phys/Dev Disabled	12

Of the 124 agencies providing services to the ARC community, 42 percent are physically located within the community boundaries. (Source: United Way)

San Diego State University

Mid-City Center
5348 University Avenue

Centre City Center
1400 Park Avenue



Harbor View Center
1960 National Avenue

Educational Cultural Complex (ECC)
4343 Ocean View Blvd.

Demographic Profile of the ARC Community Residents (1990)

	ARC (212,800)	San Diego (2,500,000)	% of Goal
White	42%	75%	
Black	21	6	
Asian	10	8	
Other	26	10	
Hispanic Origin	41	20	
Median household income+	$20,300	$38,665	52%
High school completion rate*	72.3%	78.1%	93
Employment rate*	91.2	93.0	98
Skilled workers*	77.9	81.5	96
Two parent households*	65.0	75.8	86
Non-robbery victims*	93.5	97.5	96
Welfare independence*	90.8	95.1	95

+ Projected 1990 estimates ($89). San Diego median income estimate excludes ARC community.
* Based on 1980 Census data for three subregional areas (Central, Southeast San Diego, Mid-City).

(29%), White (23%), and Asian (22%).[11] Since residents in the ARC community are largely non-White, their overall educational level is probably lower than San Diego in general. More accurate and detailed educational level information will be available in April 1992.

Unemployment in the ARC community is higher than the county in general. Labor market estimates showed the San Diego region unemployment rate at approximately seven percent, compared to 8.8 percent for the ARC community. The number of unskilled workers in this area was also higher (22.1%) compared to San Diego (18.5%).[12] Unskilled workers are defined according to the 1980 Federal Census as the "total number of residents of of the SRA, age 16 years or older who were employed as laborers, private household workers, in services or as farm workers."[13] In 1990, unemployment among youth aged 20-24 was even more profound as up to 36 percent of African-American youths and 24 percent of Hispanic youths were unemployed.[14]

The ARC community teenage pregnancy rate is generally higher than the San Diego region due in part to the increase in single-parent households. The number of births to unmarried women increased for every ethnic group (African-American 50%, Hispanic 35%). Teenage pregnancy was highest among African American mothers (18.1%), compared to Hispanics (14.8%), Non-Hispanic White (7.6%), and Asian (5.3%). The health of this population may also be characterized by the infant mortality rate. African American mothers had the highest infant mortality rate (20.3%), significantly higher than the general population (9.0%).[15]

The age and gender breakdowns of the ARC community compared to the San Diego region are fairly comparable. Changes in the age distribution have many implications in future planning. The percentage increases of those aged 5 and under (51.5%) and those aged 75 and over (49.2%) were significantly greater than the region as a whole (34.2%). In addition, the age group 15-19 decreased (-2.7%), while the 20-24 age group increased only slightly (10.7%). These statistics indicate that the growing elderly population, coupled with a decrease in the number of new employees into the workforce, will produce not only increased demand for elderly health care, but also entry-level labor concerns. The gender breakdown remains about equal (50/50).[16]

The stresses of the ARC community can be described based on the types and number of community service agencies serving its residents. Approximately 124 human service organizations provide services to the designated area with 42 percent geographically located within the ARC boundaries. Of these agencies, 40 percent target low-income populations, 38 percent access primarily families, women, and children; and 27 percent cater specifically to youth. The services provided also vary considerably, thus indicating the social assistance needs of the ARC population: 31 percent provide employment and training services; 27 percent provide educational/literacy services, 23 percent provide substance abuse services, and 23 percent provide emergency services, including food, shelter, and clothing. Twenty percent access primarily specific ethnic populations. There are seven libraries serving the ARC community (31 total in San Diego), as well as a considerable number of churches.

The San Diego Community College District (SDCCD) Workforce Education and Lifelong Learning Action Research Center (WELL ARC)

As evidenced by the demographic differences of the ARC community versus the San Diego region, residents of this area may be regarded as underserved. Many are non-college bound, low-income, and access a variety of community services. Of all service providers catering to this area, the San Diego Community College District, Continuing Education sites access the greatest proportion of the population, providing educational services largely dependent on the needs of the community. Their high level of community outreach,

combined with a network of action research offices, holds tremendous potential in improving the workforce education and lifelong learning opportunities of the ARC community residents, as well as the overall collaboration between community service providers.

In implementing action research within the ARC community various arrangements could be used. An action research office could be housed within each of four designated SDCCD continuing education sites. Faculty and students affiliated with the proposed WELLS degree program at San Diego State University could assist in providing the research component. Through effective communication between the five sites, linked with information and input from community service providers and learners, the problem-solving and theoretical knowledge base fundamental to action research would contribute in meeting the national workforce education and lifelong learning goals. A brief description of the four SDCCD continuing education sites and the San Diego State University, College of Education follows:

Centre City/Skills Center located at 1400 Park Avenue is next to City College. This site is a 2,900 ADA downtown adult education program. The community includes 82,000 commuters and many low-income, homeless, and elderly persons. The program enrolls 12,000 - 15,000 adults per year. Skills Center serves half of this population while Centre City services the other half divided equally between the older adult programs and the ABE/ESL, high school completion, and GAIN programs. Student body demographics: White 52 percent, Hispanic 35 percent, African-American 6 percent, Asian 5 percent, and Other 2 percent. Two-thirds of the student population has a need for basic educational skills. Sixty percent of the white population is in older adult programs. Programs (18 total) most accessed at Skills Centre according to ADA: Auto Mechanics, Office Systems, Electronics, and Auto Body & Paint. At Centre City, the most popular programs are ESL, Older Adult, GAIN, Learning Center, and Basic Education, High School Social Studies, Math, Career Development, and GED.

Mid-City Center, formerly known as East San Diego Center, is located at 5348 University Avenue. The center serves about 6,000 students each semester. Asian American and Latin-American students comprise the largest percentage of the student body, followed by Euro-Americans, and African-Americans. ESL classes are in great demand, followed by computer training, high school completion, and older adult classes.

Educational Cultural Complex, located at 4343 Ocean View Boulevard, provides educational opportunities to the Logan Heights, Skyline, Encanto, and Paradise Hills communities. These low to middle income communities (median income between $14,000 and $28,000) can be characterized as young and ethnically mixed. Approximately 38 percent of the population is less than twenty years of age. Ethnically one percent of ECC's student population is Native American, 15 percent Asian, 13 percent Caucasian, 38 percent Hispanic, 29 percent African-American, and four percent undeclared. ECC also has the a large special education program in the District and the ethnicity of the student population served by Disabled Student Services is as follows: 35 percent Caucasian, 34 percent Hispanic, 21 percent African-American, five percent Asian, two percent Filipino, and three percent Other.

Harbor View Center, located at 1960 National Avenue, provides educational opportunities to the Logan Heights, Sherman, and Harbor communities. These communities can be characterized as older areas in transition, with a total population of approximately 50,000 people, mostly of Hispanic origin. General statistic figures indicate that educational attainment of this community's residents for the most part stop at the primary or middle school level. Many of the jobs held by these residents are in the blue collar and unskilled worker category. Income as a whole is in the low to medium economic range. Of the 7,000 students that enrolled for classes at Harbor View in 1988-89, approximately 80 percent are classified as limited English-speakers.

San Diego State University, College of Education, has made a commitment towards developing and implementing a professional educator's degree program to enhance the education and training opportunities for of traditionally underserved youth and adults. This program would include the most up-to-date research-based knowledge about adult learning and related issues. An accompanying curriculum based on knowledge domains of the cognitive sciences foundations of education, educational arts and technology, and cultural and human resources policies and practices would be featured. In addition, students enrolled in the WELLS degree program could intern at one of the action research center sites.

Research Agenda for the WELL Action Research Center

Representative research goals for the WELL Action Research Center have been outlined within six main functions:

- Conducts research on the ARC community and the influences of the community on cognitive development
- Engages teachers as researchers in the ARC network
- Conducts research on instructional practices and learning in different settings (home, community, school, workplace)
- Provides educational and research experience for professional educators of non-college bound youth and adults
- Conducts research to improve the Economic Development of the ARC Community
- Provides technical assistance to community based groups regarding the learning and cognitive development of ARC community youths and adults

The proposed main functions are discussed below categorized according to the four NCAL issue areas (participation and service delivery, learning and instruction, impact and policy and technical assistance). The following sections represent only a sampling of the potential national research issues, questions, and concerns that the WELL Action Research Center might address.

Participation and Service Delivery

Conducts research on the ARC Community and its influences on cognitive development.

The WELL ARC will study a designated environment to identify community learning needs that, in turn, will improve the existing education and training service delivery system. This research scope includes the demographic, social, anthropological, and economic influences on ARC community residents and the impact of these cultural influences on adult learning. Insight may be achieved through various ethnographic research methods, including participant observation, taking pictures, interviewing, etc. In addition, the study of gangs, clubs, churches and the family (to study primarily intergenerational transfer of cognitive ability) provide a better understanding of the ARC community residents and their learning environment.

The action research center should also analyze targeted learner populations enrolled in various educational programs, such as adult education, secondary education, special education, early childhood education, and their effectiveness in service delivery. In so doing, the following national research questions may be studied: What impact do literacy, educational, employment and social services have on cognitive development? What are the limitations relating to the use of new cognitive skills? What is the difference between the attainment and use of skills inside the learning environment versus outside? Have continuing education programs made a difference increasing cognitive skills of participants? The data and findings obtained from contextualized research will prove more useful for individual program improvement and community development than national research data.

Learning and Instruction

Engages teachers as researchers in the ARC network

The WELL ARC will encourage and assist teachers to become reflective practitioners and to conduct research within their own classrooms. The teachers can also encourage youth and adult learners to partake in the research process, not only within the classroom but extended into the surrounding community. This level of increased involvement by teachers and students will expectedly improve learner participation, motivation and retention rates. Teachers may study any number of research questions, including the following: How are literacy skills acquired by adults? How do cross linguistic factors affect adult literacy learning? How can learning by adults with special needs be enhanced? Under what conditions is literacy ability not retained? How do improved professional development opportunities for the teacher affect the learner?

Conducts research on instructional practices and learning in different settings (home, community, school, workplace)

The WELL ARC will study adult education and training programs, such as family literacy, workplace literacy and adult literacy implemented in a variety of settings. The types of curriculum, teaching materials and methods used and problem solving techniques may be studied through class observation and interviews with instructors. Successful programs may be duplicated or used as models for other programs. In addition, the home and community learning environment of ARC residents will be studied to determine views towards education. This provides a better understanding of the learning community that may facilitate the development of an ambient learning environment to promote a learning community. Research questions include: How do service delivery factors such as teacher recruitment and professionalism, staff development, student assessment and management influence participation and retention? How can information about adult literacy services be made more accessible to those who need it?

Impact and Policy

Provides educational and research experience for professional educators of non-college bound youth and adults

The WELL ARC will provide a practicum setting for the WELLS professional degree students to see first-hand their potential learners, as well as their influences and everyday lives. This increased level of involvement enhances and strengthens the student's commitment to underserved youth and adults, and it addresses national research questions such as: What impact would improved literacy ability have for the ARC community? How do state and federal policies in education, labor, and health and human services affect the implementation and effectiveness of adult literacy programs?

Conducts research to improve the Economic Development of the ARC Community

Theoretically, economic development of individuals in a community will eventually improve the economic development of the community as a whole. In trying to promote the economic development of a specific community, an action research center could assist companies and schools design and implement programs that enhance workplace skills that fit the "enabling skills" categories outlined in the SCANS and other research reports that are concerned with improving the successful participation on non-college bound youth and adults in the workplace. This would improve collaboration between businesses and schools so educational services are more congruent with the skills needed in the workplace. It would also provide insight into the school to work transition issues, including the role of apprenticeships. The action research center could address research questions such as: What

skills should workplace instructors possess to function effectively in a classroom to provide meaningful instruction? What material would be most important to teach for success in the workplace?

The action research center could also evaluate the current labor market in the ARC community. It may study the following questions: What limitations do the workers experience that prevent them from acquiring a desirable job? What salaries do entry-level jobs pay? Can job opportunities in ARC community improve by increasing basic skills of residents? How much of an impact are JTPA/JOBS-funded programs making to help people find employment? As an ongoing activity, the action research center would provide information on national and state legislative activities and other research studies relating to economic development.

Technical Assistance

Provides technical assistance to community based groups regarding the learning and cognitive development of ARC community youth and adults

As noted earlier, the numerous research and development activities and projects that are now being funded by the federal and state governments are producing a large amount of new information of relevance to youth and adult providers. In addition to the activities reviewed above, over a dozen other federally funded research centers are producing important information (see Figure 2). The action research center would provide technical assistance to education and training programs providing services to the ARC community to promote action research and knowledge dissemination. Information could be distributed to inform other educators, researchers and service providers, promote service delivery and ultimately improve workforce education and lifelong learning opportunities for the residents of the ARC community.

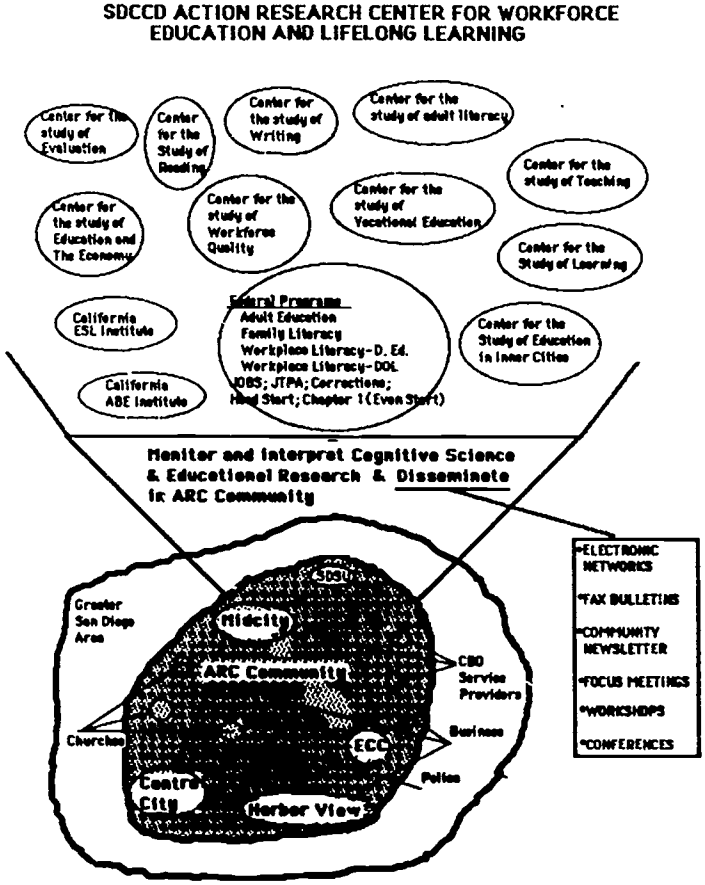


Figure 2

The San Diego Community College District Workforce Education and Lifelong Learning Action Research Center (SDCCD WELL ARC) Information Gathering, Synthesis, and Dissemination Activities.

Through these various activities, the ARC would initially influence the San Diego Community College District in the direction of the teacher-as-inquirer/researcher. Then, it is anticipated that teachers would involve learners as inquirers who could go into the ARC Community and begin a process of understanding the social construction of learning and cognitive development in various community settings. Eventually, through the use of newsletters, computer networks, group meetings and seminars, an action research center would move toward the goal of developing an enhanced "learning community" as called for in the America 2000 strategy.

Linking the SDSU Professional Degree Program, the SDCCD Action Research Centers, and the ARC Community

The WELL Strategy incorporates a two-pronged approach to improve current and future workforce education and lifelong learning opportunities for underserved populations. It will access students currently enrolled in educational programs by instituting professional growth opportunities for instructors through increased access and development of research-based knowledge in the WELL ARC. This enhancement of teacher services will translate into better services for the students. The WELL Strategy will plan for the future by ensuring that specially trained professionals enter the field prepared to address current and future challenges posed by ongoing demographic, social, cultural, and legislative changes within the workforce and workplace. These professionals will be prepared to ensure that effective workforce education and lifelong learning opportunities are available to help the have nots have.

The San Diego Community College District (SDCCD), by establishing action research centers within four participating Continuing Education sites (Mid-City Center, Educational Cultural Complex, Harbor View, and Centre City), will improve program quality which can then be extended into the surrounding ARC community. Teachers will be transformed into researchers. Researchers will gain applied experience. Together they will generate and share knowledge to initially improve classroom instruction and ultimately learner outcomes. Schools, businesses, churches, community-based organizations, police and other non-SDCCD service providers will benefit indirectly through greater access to knowledge about the residents within the community in which they are serving. This will constantly improve program quality to sustain positive results over time.

The San Diego State University (SDSU) Workforce Education and Lifelong Learn Specialist (WELLS) graduate degree program will produce a specially trained cadre of professionals to effectively design and implement innovative programs that integrate existing research findings related to adult learning and development within different contexts. They will utilize state of the art technology to develop, evaluate, and modify curriculum, instructional techniques, and authentic assessment measures to determine and enhance levels of program effectiveness. In addition, they will be knowledgable about ongoing legislative policies relating to educational and training programs for youths and adults. These talents will translate into persons more qualified to critique current human resources policies and practices, while developing legislation and programs that will meet the needs of the future. The WELLS program may also contribute to the professionalization of the education of traditionally non-college bound youth and adults by the development of various certification programs that entail less time than a full master's degree program.

The Action Research Center (ARC) Community is the geographic context in which the above projects will be initially implemented. Research data obtained from the action research centers will be more meaningful and applicable to the individual sites for program improvement. In addition, students enrolled in the WELLs degree program can perform their practicum at one of the action research centers within the ARC community. Integrating these three components will have the capacity to effect profound change on the ARC residents. By improving the educability and employability of the residents, the economic development of the ARC community will likely improve.

Figure 3

Relationship between the SDSU Professional Degree Program and the SDCCD Action Research Centers

Domains of Knowledge and Skill for the SDSU Workforce Education and Lifelong Learning Specialist

Cognitive Science Foundations of Education	Educational Arts and Technology	Cultural and Human Resources Policies and Practices
Develops an understanding of human growth and cognitive development within a framework based on research from studies in anthropology, sociology, psychology, linguistics, philosophy and computer sciences. Integrates biological, cultural and social foundations of cognition and the intergenerational transfer of cognitive abilities (knowledge; thinking skills); oral and written language; graphic tools of thought; academic bodies of knowledge (math; science; history; geography, etc.) workforce bodies of knowledge; and the applications of knowledge in the everyday world. Develops an integrated understanding of learning in childhood and adulthood as influenced by culture and other context factors.	Develops competence in using a variety of problem solving methods (including qualitative and quantitative research methods); technologies for instructional development, delivery and evaluation; methods for teaching basic academic skills, workforce skills, personal management skills in various contexts; multicultural education for ethnic, gender, age and organizational diversity; learner-centered, participatory education methods for empowering youth and adults in the education process; aiding the teacher as enquirer in action research to improve the delivery of education programs; managing informal and incidental learning.	Develops an understanding of cultural beliefs about cognitive development and how these beliefs are translated into policies and practices; federal, state and local policies and laws regarding various funding "streams" such as the Job Training Partnership Act (JTPA), the Family Support Act, JOBS, Adult Education Act, etc. and how to obtain funding for programs from these sources. Methods of work analysis to establish cognitive, social and technical skills for work for counseling youth and adults for employment and for curriculum development. Cultures of various work organizations and organizational development. Methods for community development.

Research Agenda for the SDCCD* Action Research Centers to Deliver More Effective Programs on Workforce Education and Lifelong Learning in the ARC Community

Research on Learning and Cognitive Development in the ARC Community	Research on the Design and Development of Effective Learning Environments and Educational Programs for the ARC Community	Research on the Culture of the ARC and the Human Resources Policies and Practices that Influence Workforce Education and Lifelong Learning in the ARC Community

Engages Teachers as Researchers in the ARC Network

Conducts Research on the ARC Community and its Influences on Cognitive Development

Conducts Research on Instructional Practices and Learning in Different Settings (home, community, school, workplace)

Conducts Research to Improve the Economic Development of the ARC Community

Provides Technical Assistance to Community-Based Groups Regarding Learning and Cognitive Development of ARC Community Youth and Adults

Provides Educational and Research Experience for Professional Educators of Non-College Bound Youth and Adults

* Participating Continuing Education sites are Mid-City Center, Educational Cultural Complex, Harbor View and Centre City.

The interrelationships among the competence domains identified for the WELLS and the research agenda of the SDCCD WELL ARC are illustrated in Figure 3. This figure shows that, while the WELLS graduate student is acquiring competence about the Cognitive Science Foundations of Education in his or her graduate program, new knowledge about the Cognitive Science Foundations of Education will be being developed in the SDCCD WELL ARC. Similarly, while the professional degree program produces competence in Educational Arts and Technology and Cultural and Human Resources Practices, new knowledge for these domains will be being developed in the SDCCD WELL ARC.

These projects will address the national education goals featured in the America 2000 Education Strategy to revitalize American Education for the 21st century. With their combined potential to promote the "Learning Community," and to transform the United States from "A Nation at Risk" to "A Nation of Students," the SDSU Professional Degree Program and the SDCCD Action Research Center outlined in the WELL Strategy are necessary reforms for the United States to maintain its economic competitiveness in a global marketplace and to ensure that all youth and adult learners have the ability to participate fully in American society.

Footnotes for Chapter 3

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