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# Proceedings



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# **ANNUAL AGRICULTURAL OUTLOOK CONFERENCE**

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## **HUMAN RESOURCE DEVELOPMENT IN RURAL AMERICA: RAYS OF SUNSHINE THROUGH THE CLOUDS**

Stuart A. Rosenfeld  
Director, Southern Technology Council

There is no longer any question that improvements in human resource development are the key to improving competitiveness and economic growth. The changes caused by technology and global competition in the mix of occupations and the nature of work are well and often documented.<sup>1</sup> How to bring about the needed improvements, however, is as complex as the statement of need is simple. Human resource development is even more problematic in rural areas, where resources are scarce and insufficient scale may constrain activities. Rural education has been, and still is, an enigma to education policy makers. It has been perceived as a problem by experts and administrators, to be addressed and reformed. But rural schools have distinctive strengths as well and are remembered by many who attended them-- including many prominent and successful citizens -- with nostalgia and reverence.

I believe that it is important to reiterate some of the major barriers to economic growth in rural America that may be due to insufficient levels of human resources and inadequate education and training opportunities so that policy makers can continue to address them. But there has been a great deal already said about the inadequacies of rural human resources and rural education. It is equally important to identify the educational strengths of rural America.

This paper will briefly summarize selected conditions that can impede competitiveness and then suggest reasons for optimism -- three rays of sunshine to brighten a cloudy economic forecast. They are the size of rural schools and districts, the strengths of vocational agriculture, and the potential of the systems of rural community and technical colleges.

### **The Condition of Rural Human Resources and Human Resource Development**

Nationally, average levels of educational achievement and attainment for rural areas are well below those of urban areas. For example, 14.8 percent of urban adults aged 15 and over had completed college in 1980, but only 8.8 percent of the similar rural population had completed college. Statistics, it ought to be noted, are heavily

weighted by averages in the rural South, as shown in Table 1. The South is the region with the lowest levels of educational attainment; in other regions, urban-rural differences are much less significant.

**Table 1.**

**Percent of Population Aged 15 and Over Completing High School and College, 1980, by Urban-Rural Residency and by Region**

<u>Region</u>	<i>High School</i>		<i>College</i>	
	<u>Urban</u>	<u>Rural</u>	<u>Urban</u>	<u>Rural</u>
Northeast	64.5	64.7	15.1	12.8
North Central	66.1	61.6	13.8	8.2
South	62.7	48.5	14.8	7.2
West	70.1	65.5	15.7	11.8
United States	65.7	56.4	14.8	8.8

Source: Bureau of the Census, *Detailed Population Characteristics; U.S. Regional Summary, Volume 1* (Washington, DC: U.S. Department of Commerce, Government Printing Office, March 1984), Table 316.

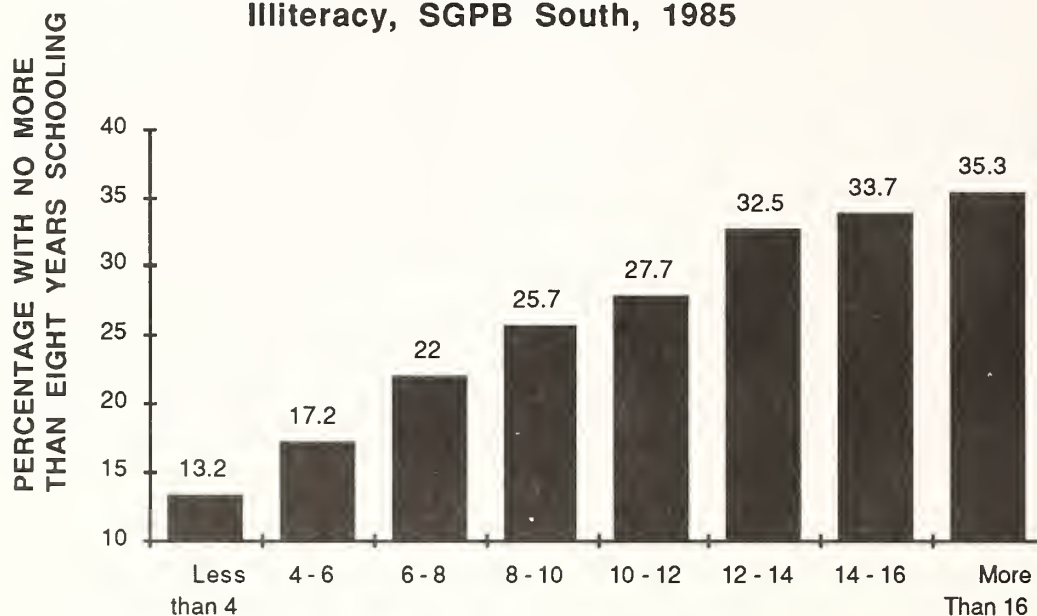
Much of the reason for the South's low levels of attainment among its rural adults can be traced to historically lower levels of spending for public education, segregated schools (more than 90 percent of all the rural Blacks in the nation reside in the South), higher levels of poverty, and an industrial base that did not require or value education. As the South's economy has changed, however, education has become increasingly important. In the 1980s, those counties with the lowest literacy levels are also those with the poorest economies. Figure 1 shows the relationship between levels of attainment and unemployment rates in the South. Counties with the highest levels of unemployment at the end of 1985 also had the highest percentage of adults with no more than eight years of education. One of the major impacts of low levels of education among adults is higher costs of retraining the work force for new jobs. The need for literacy skills prior to retraining combined with diseconomies of scale in sparsely populated areas drives up training costs.

In addition to lower educational attainment, educational achievement has been lower in rural areas. One of many reasons for poorer educational performance is the lack of educational resources. On average, rural school districts still have fewer revenues per pupil for schools than urban school districts, although state equalization formulas in the past decade have reduced disparities. Differences are

due in large part to unequal wealth and the lower tax bases of rural districts. Recent drops in farm values have exacerbated differences in urban and rural tax bases.

Rural-urban differences were compared in three southern states, Georgia, North Carolina and Tennessee. Southern states tend to provide a larger share of support from the state relative to the local share and are less dependent on property taxes, so the disparities would be expected to be less than in other regions. In these states, the ratio of per pupil expenditures in districts located in metropolitan counties were compared to those located in nonmetropolitan counties.

**Figure 1. Unemployment and Illiteracy, SGPB South, 1985**



**UNEMPLOYMENT RATE, END OF 1985**

Note: SGPB States include AR, AL, FL, GA, KY, LA, MS, NC, OK, SC, TN, VA. Data are from U.S. Census and U.S. Department of Agriculture

**Table 2.**

**Ratios of Metro to Nonmetro Per Pupil Expenditures in 3 States, 1985-86**

Category	Georgia	North Carolina	Tennessee
State and Local Exp. Per Pupil	1.19	1.10	1.31
Local Exp. Per Pupil Only	1.78	1.58	1.81

Source: State Departments of Public Instruction

In all three states the average of metro expenditures per pupil is higher than nonmetro, from a relatively small difference in North Carolina to a significant difference in Georgia and Tennessee. Costs of living admittedly are lower in rural areas, but that must be offset against high costs due to diseconomies of scale in the very smallest districts so that costs of providing services may in fact be equal.

Federal revenues were intentionally excluded from the comparisons since they are mostly targeted to special needs and are not available for the basic educational program. Though not a factor in equalizing the quality of basic educational programs, federal programs are nonetheless critical resources for rural areas, particularly in the South. The federal government provides compensatory education, which is intended to improve the educational performance and attainment of those students most at risk. Due mainly to the high allocations to the rural South, rural areas nationally received 15 percent more federal funding per capita for elementary and secondary education in 1980.<sup>2</sup>

The next table shows differences in exposure to science and mathematics among rural, urban, and suburban areas. Students in rural schools are less likely to have as many courses in math or in science during their years in public school, and appear to be at a disadvantage in entering careers in scientific fields, many of which are projected to have high growth rates. If, however, some rural schools are providing math and science education in other forms -- such as science through agricultural education -- the most important disadvantage in those schools may be lack of acceptable college entrance requirements, not necessarily lack of knowledge.

**Table 3.**

**Percent of High School Seniors with High Concentrations of Math and Science, 1982**

	Number of Courses			
	4	5	6	At Least 4
Science				
Urban	15.2	4.6	3.6	23.4
Suburban	15.4	4.3	2.1	22.8
Rural	13.2	3.1	1.4	17.7
Mathematics				
Urban	30.3	10.6	5.5	46.4
Suburban	32.1	9.8	4.2	46.1
Rural	20.4	5.6	1.9	27.9

Source: **High School and Beyond Tabulations**, Mimeo, National Center for Education Statistics, U.S. Department of Education, April 1984.

### Three Rays of Sunshine

Rural human resource development has some unique strengths that are not always recognized or accepted as such and are not fully exploited. They are the size of rural schools, thought to cause economic inefficiencies but often improving educational proficiencies; vocational agriculture, so often perceived as outdated but in reality underrated; and technical colleges, which are becoming focal points for both human resource and economic development.

#### Size and Organization of Rural Schools: Implications for Reform

The first and unexpected bright spot for rural human resource development is the size of its schools. Many of the strengths and weaknesses of rural schools have been perceived largely as functions of size. Historically, the "rural school problem" was blamed on schools that were too small to be efficient or effective, and consolidation was the conventional reform. Indeed, consolidation did expand opportunities and improve education -- up to a point. One-room schools have virtually disappeared, and the vast majority of rural students today attend schools with at least 200 students. The question is how small is too small? Very small schools can be relatively costly to operate, which has rationalized many a consolidation. But the marginal economic savings resulting from increasing size drop rapidly after a school reaches a few hundred students.

There is a size beyond which the marginal gains drop below marginal increases in costs, and that size may be less than policy makers once thought. A school can be too small to provide diversity within the curriculum and student body, but it can also be too large to provide students with sufficient opportunities for participation in school activities, positions of leadership, and individual attention.<sup>3</sup> It can be too small to have a diverse enough teaching staff but too large for teachers and administrators to have the autonomy and flexibility considered now to be essential to excellence in education.

The optimum size for a school, I believe, is smaller than the size generally sought by educational administrators. School consolidation taken too far in search of lower unit costs makes the schools more impersonal and bureaucratic and takes away the principal advantage of smaller size -- the greater opportunities for students to take part in more activities and feel more important to the functioning of the organization. It is also out-of-step with the economic trends toward decentralization and smaller production units. Just as business is moving toward smaller production units and decentralization by out-sourcing, schools can have the same advantages. The size at which schools can operate most effectively is closer to the average size of the rural school, not the urban school.

The importance of school size, while virtually ignored in the various commission reports on education, was cited repeatedly in the results of studies of educational quality. John Goodlad, in *A Place Called School*,<sup>4</sup> found that one common

characteristic of the schools clustering at the top of his sample in quality of education was small size. "It is not impossible to have a good large school," he wrote, "it is simply more difficult. James Coleman, in the findings of the Panel on Youth,<sup>5</sup> wrote "there remains the possibility that small schools are better than big schools....the benefits of small size have lain in what are often described as 'intangibles': the quality of relationships, the motivation created, the involvement in common goals." Ernest Boyer, in *High School*<sup>6</sup> and Gilbert Sewell, in *Necessary Lessons: Decline and Renewal in American Schools*,<sup>7</sup> echo the view that small schools or small school units are more effective than larger schools, which are the rule in most American cities, because they contain a different school ethos.

A recent article in the *Harvard Educational Review*<sup>8</sup> predicted that "reforms will fail if they do not prompt schools to forge for themselves an educational identity." Rural schools are more likely to have that needed identity, and if they are given the resources are therefore in a better position to respond to the national call for educational improvements.

Thus rural education, with its tradition of smaller scale and more participation among students, is in a position to more readily adopt the latest educational reforms that focus on school-based innovations. Rural communities have recognized the value of smaller schools for years. Even though they have at times fought for schools that were indeed too small to be effective, they have understood and valued smaller-scale education, where parents and teachers knew one another and teachers and students knew one another.

### **Looking to the Past: Vocational Education**

A second unexpected ray of sunshine for rural education comes from one of its oldest and most successful programs: vocational agriculture. Since the early 1960s, educators and policy makers have formulated vocational education policy on the belief that vocational agriculture was leading rural youth toward phantom jobs in an outmoded economy. President Kennedy's Panel of Consultants on Vocational Education stated in its pathbreaking 1961 report to the nation<sup>9</sup> that vocational education programs ought to correspond to state and local labor market demand, not local interests and values. And the demand for farmers was rapidly declining.

What the Panel failed to take into account, however, was the deep and very real philosophical and methodological differences between vocational agriculture and other vocational education programs. The uniqueness of vocational agriculture is based in large part on its historical underpinnings, which contrast sharply with the origins of trade and industrial vocational education. Vocational agriculture began as a response to a grass roots movement among those who would enroll their own children rather than as a program proposed by industrialists for someone else's children. Second, it was designed to prepare youth for self-employment, not to be employed by others and thus did not become as narrowly specialized as industrial vocational education. Third, vocational agriculture developed close ties to and support from the

community. And last, it was intended to prepare youth to understand, evaluate, and adopt new technologies in farming, not just to adapt to technological change in the work pace.

Perhaps even more important today, vocational agriculture characteristically includes many of the activities and approaches currently recommended for the improvement of secondary education in general: training for leadership and entrepreneurship, longer periods of time devoted daily to education, a problem-solving approach to learning, high quality teachers, and greater cooperation with the private sector. The breadth and scope of vocational agriculture set it apart from more narrowly focused trade and industrial programs. The agriculture curricula typically include all of the management, finance, and marketing aspects of farming -- skills useful in any small business enterprise. Students are required to operate income-generating projects or experiments and record finances and productivity. The program's problem-solving approach bears many similarities to engineering curricula. Most programs remain housed in the comprehensive high school, making it easier to combine the vocational and academic curricula. And the leadership training provided through Future Farmers of America is widely recognized as the most effective program of its type in the nation and has produced a long line of alumni who have distinguished themselves in politics, science, and many other fields.

It's not often that one can look backward to find a model for the future. But rural education has a too-well kept secret in vocational agriculture, a program that may be the nation's most effective *model* for meeting the skill needs of the emerging economy. The term "model" is crucial, because the strengths of vocational agriculture can be generalized for other occupations, particularly as management styles change and the economy demands broader and more flexible skills, and because vocational agriculture develops entrepreneurship.<sup>10</sup>

Many schools, unfortunately, have been influenced by the industrial education philosophy and have strayed from vocational agriculture's traditional goals. Emphasis in vocational agriculture on science, technology, leadership, and cooperation has been lessened by years of pressure to specialize and to become more like other vocational education programs. Some programs simply lack the resources, support, or quality teachers to attain high standards of excellence. But strong vocational agriculture programs are still evident in many schools. The counselor at Jackson County High School in rural Kentucky stated emphatically in the fall of 1987 that vocational agriculture was the strongest and most highly respected program in the school, drawing the best students. A recent analysis of the survey of high school sophomores in 1980 *High School and Beyond* found that in 1984, the 1982 graduates of vocational agriculture programs were earning significantly more than graduates of any other specialized vocational program.<sup>11</sup>

A study soon to be released by a National Academy of Sciences' Committee on Agricultural Education in the High School recommends that vocational agriculture capitalize on its historical strengths and philosophy. High school programs, the report concludes, should include marketing, management, economics, and public policy;

increase emphasis on scientific principles and processes; and offer greater diversity in subject matter. Further, the Committee will recommend that applied science courses within vocational agriculture be recognized as meeting college science entrance requirements.

The education and training gained by students in vocational agriculture can be adapted to other occupations and careers, and the attributes of vocational agriculture can be adopted to strengthen other vocational education programs.

### **Linking Education to Rural Development: The Two-Year Community and Technical Colleges**

There is yet another ray of sunshine in rural America, a strength that is not a remnant of the past but a rapidly expanding opportunity for the future. That is the two-year technical college. Although the two-year community and technical college is not a uniquely rural institution, the reorientation of the colleges in rural areas, combining the dual missions of education and training with economic development, is primarily a rural phenomenon. The fact that the institutions were built with substantial support from federal economic development legislation enacted to address rural economic needs-- the Appalachian Development Commission and the Economic Development Commission -- is illustrative of their job and income production expectations.

The two-year colleges have developed and matured over the years into effective centers of human resources and human resource development that are only beginning to realize their potential: that is, as catalysts for economic development. Rural community and technical colleges are becoming, in some places, holistic technology resource centers, not only educating individuals to use and understand technology in the work place and to make decisions regarding its use but brokering technology transfer in ways that are as innovative as the technological advances themselves.<sup>12</sup>

The potential characteristics of rural comprehensive community and technical colleges include education ranging from management education to technical associate degree programs to retraining the existing work force to basic literacy programs. They also include technical assistance to small businesses, new business incubators, technology transfer agents, and advanced manufacturing laboratories in which manufacturers can learn about new equipment and test innovative processes.

The centerpiece of the new college is a revised educational curriculum for a "Renaissance Technician." It is a form of broad-based postsecondary education somewhat reminiscent of vocational agriculture because it provides the individual with a solid basic technical and interdisciplinary education and the ability to understand, not just use, technology and to be flexible. This marks a major shift in policy from the highly customized training (pegged to the specific organization and equipment of a single company) that dominated the economic development side of the colleges in the past. Schools like Piedmont Technical College in Greenwood, South Carolina have already instituted programs that begin with basic scientific and mathematical concepts

and communications, and end with students learning about sophisticated manufacturing processes in a problem-oriented, team environment.

Some of the most innovative and ambitious new programs are aimed at creating jobs at the same time students are being educated. The advanced manufacturing demonstration and development center, for example, can be a rural showcase for new technologies and a laboratory for small- and medium-sized companies to try out new processes as well as a place for students to work with employers and demonstrate their skills and talents. Examples of successful rural centers are the Noble Center in the Technical College in Okmulgee, Oklahoma and the Fox Valley Technical Institute in Appleton, Wisconsin. Some schools have actually established technology-based business incubators -- for example, Niagra County Community College, New York and North Central Technical Institute in Wisconsin.

Examples of programs in technical colleges that are directly aimed at economic development include small business assistance centers in 38 of North Carolina's Community and Technical Colleges, technology transfer agents operating out of Ohio's technical colleges and soon to be added to Virginia's Community College system, and the NASA technology transfer system available in South Carolina's technical colleges.

Each of the attributes of rural education mentioned -- smaller scale, vocational agriculture, and community and technical colleges -- if recognized and utilized provides hope for the future of rural America. Assuming that economic growth will hinge on its work force and its human resource base, which in turn will depend on the quality of human resource development, then the future may be brighter than it has been in some time.

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<sup>1</sup> Stuart A. Rosenfeld, Ed Bergman, and Sarah Rubin, **After the Factories: Changing Employment Patterns in the Rural South**. (Research Triangle Park, NC: Southern Growth Policies Board, December 1985).

<sup>2</sup> Norman J. Reid and Eleanor Whitehead. **Federal Funds in 1980: Geographic Distribution and Recent Trends**, ERS Staff Report No. AGES820927. (Washington DC: Economic Research Service, U.S. Department of Agriculture, November 1982).

<sup>3</sup> See Roger G. Barker and Paul V. Gump, **Big School, Small School: High School Size and Student Behavior**. (Stanford: Stanford University Press, 1964).

<sup>4</sup> John I. Goodlad, **A Place Called School: Prospects for the Future**. (New York: Signet Books, 1984).

<sup>5</sup> James Coleman, et. al., **Youth: Transition to Adulthood**. (Chicago: University of Chicago Press, 1974).

<sup>6</sup> Ernie Boyer, **High School: A Report on Secondary Education in America**. (New York: Harper Colophon Books, 1983).

<sup>7</sup> Gilbert Sewell, **Necessary Lessons: Decline and Renewal in American Schools**. (New York: Free Press, 1983).

<sup>8</sup> David L. Kirp, "Educational Reform and Institutional Competence," **Harvard Educational Review**. 57 (August 1987), pp. 308-331.

<sup>9</sup> Panel of Consultants on Vocational Education, **Education for a Changing World**. (Washington, DC: Government Printing Office, U.S. Department of Health, Welfare, and Education, 1963).

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<sup>10</sup> For more information see "Vocational Agriculture: A Model for Educational Reform" **Education Week**, September 26, 1984.

<sup>11</sup> Paul B. Campbell and Andrew Kolstad, "Vocational Education: Nature and Impact." Draft chapter from analysis of High School and Beyond data, National Center for Research on Vocational Education, Columbus, Ohio, December 1985.

<sup>12</sup> Described in more detail in Stuart A. Rosenfeld, "Technical and Community Colleges: Catalysts for Technology Development" in **The Role of the Community, Technical, and Junior Colleges in Technical Education Training and Economic Development**. (Washington DC: American Association of Community and Junior Colleges, June 1987).