EDUCATION AND RURAL DEVELOPMENT

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Southern Growth Policies Board

The Southern Growth Policies Board is an interstate compact of twelve southern states and Puerto Rico established to spur economic development and facilitate interstate cooperation.

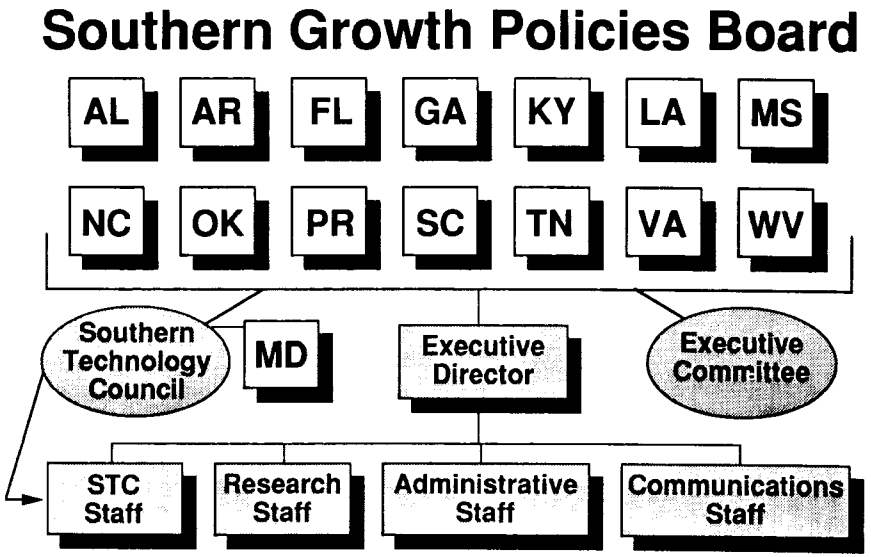
Members include Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Oklahoma, North Carolina, Puerto Rico, South Carolina, Tennessee and Virginia. West Virginia joined by executive order this past summer and if the legislative approves will become the fourteenth member.

The Policies Board consists of five people from each state/commonwealth, including the governor, two citizens appointed by the governor and two legislators. We are chaired by rotating governors. We have a staff of about fifteen located at the edge of that mecca of high tech, the Research Triangle Park (RTP) in North Carolina.

The Southern Technology Council, which I direct, reports to the Policies Board. The Council is a separate advisory arm with staff that concentrates on science and technology policies. It is chaired by the Policy Board's chair-elect.

The original idea for Southern Growth was Senator Terry Sanford's. Legend has it that Terry Sanford, then governor of North Carolina, was driving through northeastern New Jersey on a recruiting mission when he came to the realization that the South might some day look as desolate as that area of northern New Jersey. He came up with an idea for a regional organization that would plan for the rapid growth he anticipated and avoid—in cities—what he feared would be "northern mistakes in southern settings." And for the first ten years, urban growth really drove the board's research agenda. However, in late 1982 I arrived with a strong interest in, and concern for, the rural South, an area that may have gotten the jobs, but certainly not the income. That was a time when economies were shifting. Cities were prospering, but growth, even in jobs in rural areas, was slowing. Our attention turned to the rural South.

Most of you are well aware of how important human resource development and schools are to rural development. All of the recent reforms have been predicated on economic growth. There is no longer any question that improvements in human resource develop-



Southern Technology Council

ment are the key to improving competitiveness. The newest business climate indices now include things like expenditures per pupil. But now they award the highest scores for the highest expenditures, not the lowest. In the past, businesses sought the lowest taxes, but today they are willing to pay more taxes if the result is better education.

Nonmetro South Employment Trends

Back in 1985, the Southern Growth Policies Board released a report called *After the Factories*, a study of employment patterns in the nonmetro South between 1977 and 1982. You may have seen that report. A year and a half ago we updated and expanded that analysis in a report called *Making Connections: After the Factories Revisited.* We wanted to look beyond the recession and try to see where recovery occurred. In addition, we wanted to describe changes in employment and per capita income and see if we could find explanations for the variations. Naturally, the causal variables included education. Unfortunately, however, we were stuck with attainment levels—measures of education that were readily available by county for all twelve states—but also looked at technical education and access to colleges and universities.

Importance of Education Validated

We found that education and human resources have been the most important factors in nonmetro economic growth. In every re-

spect the importance of education—levels of education, institutions of higher education and technical expertise—is validated.

First, the percent of adults with less than eight years of education, for example, is strongly associated with both job growth and income growth. This confirms the assumption held that growth and education go hand in hand in today's economy, and it supports the investments being made in education on economic grounds. The higher the levels of educational attainment in a county the more likely it was to add new jobs. And the higher the levels of educational attainment in a county the more likely it is to raise per capita income.

Adult Illiteracy Rates and Changes in Employment and Income

% Adults with Less than 8 Years of Education or Less	Number of Counties	Annual Employment Growth, 1977-84	Annual Income Growth, 1980-85	Per Capita Income 1985
< 24	83	2.81	3.43	$9,245
24-30	160	2.17	2.40	8,122
30-36	272	1.69	1.70	7,678
36-42	182	1.32	1.47	7,141
> 42	118	1.34	0.66	6,466

Growth Not High-Tech

An unexpected finding was that scientists, engineers and technicians had no apparent impact on nonmetro growth and were negatively associated with changes in manufacturing employment. It appears that much of the growth was not high-tech but traditional labor-intensive branch plants. Or if it was high-tech, employees were not called technicians. There are other possible explanations. The numbers are taken from the 1980 census and represent scientists and engineers then in residence, not in the work force. Scientists and engineers tend to be highly concentrated at or near re-

Technical Labor Force and Economic Growth in SGPB South

% of Labor Force Employed as Scientists, Engineers or Technicians, 1980	Number of Counties	Annual % Employment Growth 1977-84			Income		% Counties with College or University
		Total	Manufacturing	Services	Annual Growth 1981-85	Per Capita Income 1985	
<0.5	46	1.77	1.80	1.75	0.64	$6293	6.5
0.5-1	161	1.56	1.03	2.26	1.24	6838	10.6
1-1.5	251	1.90	0.74	3.06	2.65	7623	12.4
1.5-2	177	2.13	0.46	3.50	2.36	8032	16.4
2-3	114	2.05	-0.13	3.47	3.51	8403	21.1
>3	48	1.89	0.22	3.61	3.97	9202	25.0

search centers and large universities, most of which are in metro centers. *Metro counties had proportionally twice as many technical and scientific workers in residence as did nonmetro counties.* Further, manufacturing in the rural South still employs fewer engineers and technicians on average than in other regions and production remains for the most part labor-intensive rather than capital-intensive.

Rural Human Resource Development

Rural human resource development has three unique strengths. At least two of the three are usually unappreciated and even perceived as weaknesses instead of strengths. The third is appreciated but not fully utilized. I'm referring to 1) the size of rural schools and districts, 2) vocational agriculture, and 3) rural community and technical colleges.

Rural School Size, Organization

The first and unexpected bright spot for rural human resource development is the size and organization of its schools. Many of the 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 400 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 are not worth the 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. 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 to-

ward 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 in studies of educational quality. John Goodlad, in *A Place Called School*; Ernest Boyer, in *High School*; and Gilbert Sewell, in *Necessary Lessons: Decline and Renewal in American Schools*, found that the most common characteristic of all of the best schools was their small size. Small schools or small school units, they agreed, have a different school ethos that is more favorable to learning and are more effective than the larger schools that are the rule in most American cities. Much of the success is attributed to intangibles: the quality of relationships, the motivation created, the involvement in common goals. 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.

Vocational Agriculture

A second unexpected ray of sunshine for rural education comes from one of its oldest and most successful programs, vocational agriculture, now called agricultural education. Why do I consider this a strength? Since the early 1960s, educators and policy makers have formulated vocational education policy on the belief that vocational agriculture was leading rural youth toward disappearing jobs in an outmoded economy. President Kennedy's Panel of Consultants on Vocational Education stated in its pathbreaking 1961 report to the nation that vocational education programs ought to correspond to state and local labor market demand, not local interests and values. And that obviously was not farming.

What the Panel failed to take into account, though, was the deep and very real philosophical and methodological differences between vocational agriculture and other vocational education programs. Vocational agriculture is different. Its uniqueness is based in large part on its historical underpinnings. These 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 agri-

culture 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 place.

Perhaps even more important today is that *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.

Unlike most 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. 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. The leadership training provided through Future Farmers of America is widely recognized as the most effective program of its type in the nation. Agricultural education can be a very effective means for teaching science and technology and, as the recent National Academy of Sciences report states, agricultural education courses ought to be rigorous enough to be accepted for college entrance requirements.

COMPARISON OF AGRICULTURAL AND INDUSTRIAL VOCATIONAL EDUCATION

	AGRICULTURE	INDUSTRIAL
SUPPORT	Grass roots	Corporate organizations
ATTITUDES	Leadership	Discipline
TECHNOLOGY	Assess Needs& Adopt	Learn to Adapt
SOCIAL PROBLEM	Stem Out-migration	Deal with Immigration
ECONOMY	Entrepreneurship	Mass Production
BUS. RELATIONSHIPS	Cooperative	Competitive
SKILL NEEDS	Multi-disciplinary	Specialized

I'm probably preaching to the wrong audience. But the implications for non-ag education are too often overlooked. It's not often that one can look backward to find a model for the future. Vocational agriculture has been a too-well-kept secret and perhaps 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.

Many schools, unfortunately, have gone in the opposite direction. They 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.

It's like the story of the tourist who passed a farm and saw a pig with a wooden leg. Intrigued, he stopped to ask the farmer why the pig had the wooden leg. The pig is wonderful, the farmer said. Just last month when my tractor tipped over and pinned me under it, he heard me, ran over and pushed the tractor off of me. And last week, when someone was trying to break into our house, he tapped on the window, woke us, and we drove the intruder away. Still puzzled, the visitor asked, "But why the wooden leg?" "Well," said the farmer, "a pig that wonderful, you don't want to eat all at once." And that's precisely the way that vocational agriculture is being treated, slowly eaten away despite its value.

Rural 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 just 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.*

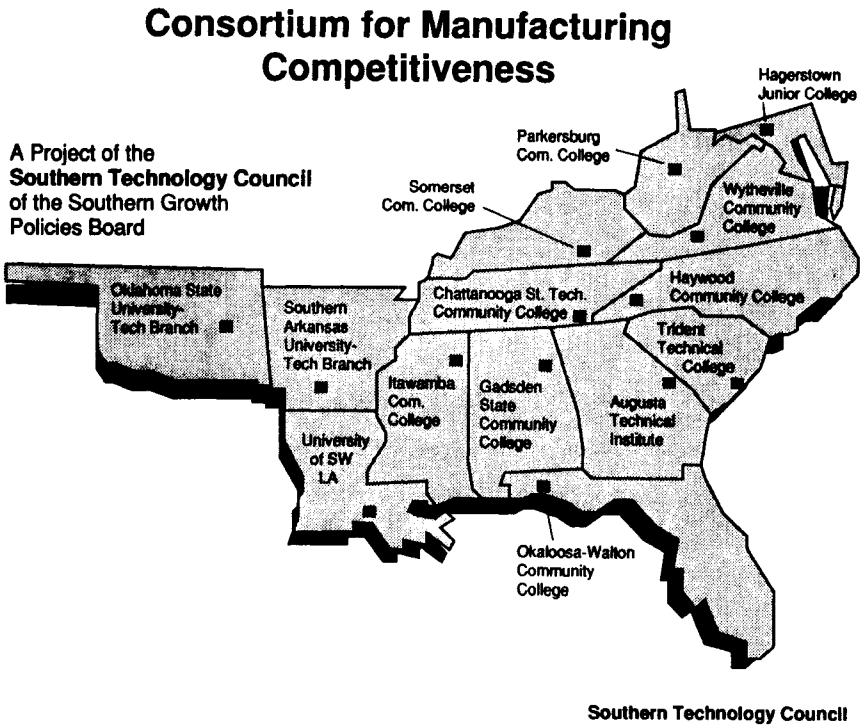
The potential of rural comprehensive community and technical colleges includes education ranging from management education to technical associate degree programs to retraining the existing work force to basic literacy programs. It also includes technical assistance to small businesses, new business incubators,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

Central to the new technical college is a revised educational curriculum that prepares an individual to be 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.

The Southern Technology Council has a demonstration project now entering its second year called the Consortium for Manufacturing Competitiveness. Thirteen two-year colleges, one in each state, are expanding their missions to assist small and rural manufacturers in modernizing. The idea is that these colleges are better able to reach the small rural firm and that they have, or have access to, the expertise needed. They are expected to help deploy technology directly and train students in work for the future. One of our current projects is to learn what skills are needed by state-of-the-art small manufacturers so that colleges can train for the future, train workers to be innovators and "change agents," not just passive workers.

The results so far have been remarkable. The colleges are taking on responsibilities they never would have dreamed of a year ago. For example, in two states, the universities have assigned rural industrial extension agents to the colleges as a test of the value of local extension engineers. Two states, Arkansas and Kentucky, have formed mobile automation labs to go out to rural firms for demonstration and training.

We're involved in another activity that sounds very much like it was borrowed from agriculture—industrial networking. That means we're trying to help manufacturers form cooperatives around various common needs. All fourteen sites have become part of the Southeast Manufacturing Technology Center, funded by the National Institute for Standards and Technology, and will be hiring people to carry out tech deployment as intended in that program. Al-



though these are not directly educational, all programs are linked to various improvements in technical education. The underlying assumption is that technology transfer happens through people and that education and training are critical.

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. Economic growth *will* hinge on the human resource base of rural areas and the quality of that base, in turn, will depend on the quality of human resource development. Rural areas probably will not be able to compete on urban terms, but maybe they can do even better to look to their own strengths.

A new document of the Southern Technology Council—perhaps its most important document to date—is *Turning to Technology: A Strategic Plan for the Nineties.* In it, we lay out goals, objectives and strategies with assigned responsibilities for the region. Although we do not address agricultural technology directly, there is an emphasis here on rural industrial growth and agricultural education is mentioned as a model for experiential and science education. Governor Roemer has committed to seeing it implemented and we expect it will have an impact on the region.