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EDUCATION, TRAINING, AND ECONOMIC GROWTH

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In my relatively limited contacts with professional educators in public affairs I have been disturbed occasionally by the heterogeneity of the activities which parade under the public affairs label. Perhaps differing interpretations should not surprise me. Obviously, public problems are varied and complex, and the meager educational resources devoted to them are inadequate.

This situation demands that we carefully analyze the importance of alternative activities. I will offer two premises:

1. National economic growth and progress are priority goals of the American people.
2. Extension economists who spend some time on public affairs are interested in activities which contribute to economic growth.

Any public affairs specialist who accepts these two premises cannot avoid giving attention to the nation's education and training programs. Education and training, both past and potential, is becoming recognized as the major contributor to economic and social growth.

Improved education and training can contribute to national economic growth in three ways:

1. Improve human resource productivity.
2. Utilize human resources previously unemployed.
3. Stimulate invention and innovation.

Increasing the productivity of any resource tends to increase growth potential. The rising productivity of the human resource is due to the improved quality of labor; or as T. W. Schultz writes, investment in human capital.

Educators point to agriculture as "the pace-setter in the productivity contest" and medicine as a close second. The 6 percent man hour productivity increase in agriculture as compared with 2.5 percent for nonfarmers is accounted for by research, education—knowledge.

The relationship of productivity to education is indicated by the average earnings at age 45 of a college graduate of \$8,800, a high school graduate \$5,100, and below high school \$4,200.

A short time ago the Department of Labor issued a list of over 80 critical jobs—jobs essential to the economic well-being and common defense of the country for which not enough workers are now available and for which few qualified people are in sight. At the same time between 4.5 and 5.5 million people are unemployed.

I do not intend to imply that we have no lack of demand for labor at our present rate of national growth. However, I do say that if training and education can shift a worker from the unemployed list to useful productive labor, the result is a contribution to economic growth.

New ideas are not entirely dependent on education and research—but the relationship appears to be growing. Invention and innovation have become major factors of economic growth. Education and training are required for research. After successful research more education and training is needed in order to utilize the research. Research has served as the initiating factor or catalyst in almost every major industrial development. Economic growth is not the only justification for training and education, but it is an important one.

I have used “training and education” as one term in order to avoid the definition difficulties encountered when the terms are separated. In order to isolate more precisely the interest of the economist I will divide training and education into three areas.

1. Occupational Information and Guidance Prior to Entering the Labor Market

Information causing excess labor supply in an occupation results in relatively lower wage returns for that occupation. It is frequently stated that potential entrants into farming greatly exceed the satisfactory farming opportunities available, resulting in low wage returns in farming. In order to investigate this question one-sixth of all Iowa farm boys in the senior high school class of 1958 were interviewed. The results of the 870 questionnaires collected are shown in Table 1.

Three years later the same boys were interviewed again. Only 9 percent were farming, and it appears unlikely that all 38 percent will find satisfactory farming opportunities.

Why did 38 percent plan to farm? This study indicated that occupational information was one of the important factors influencing the decision. For example, the income expectations from given resource combinations were much higher among those planning to farm than among those not planning to farm (Table 2).

TABLE 1. CAREER PLANS OF IOWA FARM BOYS IN
SENIOR HIGH SCHOOL CLASS OF 1958

Career Plans	Number	Percent
Plan to farm	330	37.9
Plan a combination farm and nonfarm job	10	1.2
Had given no thought	24	2.7
Plan a nonfarm job		
Professions	216	24.8
Craftsman	110	12.6
Military career	23	2.6
Clerical	23	2.6
Managers and officials	19	2.2
Laborers	14	1.7
Service	9	1.1
Sales	3	.3
Nonfarm unspecified	74	8.5

TABLE 2. ESTIMATES OF 1965 NET CASH INCOME FOR SMALL, MEDIUM, AND
LARGE FARMS BY BOYS WHO WERE "CERTAIN" OF THEIR PLANS

Farm Size Specific Resource Combinations Were Described	Estimated Mean Net Cash Income in 1965	
	Boys "Certain" of Their Plans to Farm	Boys "Certain" of Their Plans Not to Farm
Small farm	\$ 6,920	\$ 3,970
Medium farm	13,140	7,390
Large farm	24,200	14,570
Average all three sizes	14,753	8,643

Data from Iowa Farm Business Association records and the accepted outlook information show that the boys not planning to farm are basing their occupation decisions on more realistic information than are the boys planning to farm.

Decreasing income expectations greatly affected the number of boys planning to farm (Table 3). When the ratio was .67 (\$6,000 in nonfarm job and \$4,000 net in farming), 89 percent of the group preferred nonfarm employment, whereas only 11 percent preferred farming. A 20 percent decrease in relative income in farming from the base of 1.00 was associated with a 39 percent decline in the number preferring farming.

I am not saying that adequate occupational information would solve all of the problems of less than comparable wage in farming. However,

TABLE 3. NUMBER OF BOYS WHO WOULD PREFER TO FARM AT DIFFERENT LEVELS OF FARM INCOME AS COMPARED WITH NONFARM INCOME

Relative Income (Ratio of Income in Farming to Income in Nonfarm Job)	Would Prefer to Farm at Stated Relative Income	
	Number	Percent
1.62 and over	793	92
1.50	770	90
1.37	696	81
1.25	624	73
1.12	550	64
1.00	480	55
.89	406	47
.80	292	34
.73	191	22
.67	98	11
.62 or less	69	8

it does appear to offer more promise in solving the adjustment problems in agriculture than many of the abortive attempts of the past.

Top priority should be given to providing occupational information to the potential entrant before he enters the labor market. The most effective method of dissemination would be through the guidance and counseling system of schools. However, parents of the potential entrant and unemployed adults also need occupational information.

2. Training and Education to Match Human Resources With Society's Needs

College, vocational, technical, and retraining programs should all be tuned to the changing occupational demands as our economy undergoes structural adjustments.

The need for this consideration is apparent if we assume that the Iowa farm boys are successful in realizing their occupational plans (Table 4).

The figures show that 39.1 percent of the boys are planning to enter an occupation which includes 7.9 percent of the total jobs with prospects of a 17 percent decrease in number of opportunities before 1970. Obviously this is not a very desirable matching of human resources with society's needs.

Training and education must be geared to society's needs if it is to make maximum contributions to the nation's economic growth. Society's needs are an important consideration for the trainee. A retraining program in Massachusetts rewarded the retrainees with a 16

TABLE 4. OCCUPATIONAL PLANS OF BOYS AND
PROSPECTIVE JOB OPPORTUNITIES

Occupational Classification	Percentage of Iowa Farm Boys Planning to Enter	Expected Increase in Jobs 1960-1970 in U.S.	Actual Percentage of Working Force 1960 in U.S.
Professional and technical	28.4	+42	10.8
Managers and proprietors	2.5	+23	10.2
Clerical	2.6	+25	14.5
Sales	.6	+20	6.5
Industrial (skilled and semi-skilled)	16.3	+21	30.5
Unskilled labor	1.9	7.0
Service	4.2	+24	12.6
Farm	39.1	-17	7.9

(Percentage excludes boys who had no occupational plan)

percent increase in weekly wages and a 50 percent increase in annual average income—except for barbers! Those who became barbers and beauticians suffered a \$10 loss in weekly wages. My guess would be that Massachusetts was already well supplied with barbers!

3. Information and Education on the Social Mechanism

Certainly we all need more information on the type of social innovation that will accomplish society's needs with high quality at low cost, and more information on the tax structure which will equitably distribute these costs. Before we can provide effective counseling and guidance, before we can provide effective training and education, we must have the appropriate "mechanism." The school and the school system and the adult education programs must be structured in a manner that makes "success" possible. People must understand the alternatives and the consequences if they are to make an intelligent decision.

In 1957 our total expenditure on public education was only 3.4 percent of our Gross National Product. The Rockefeller Fund report for the White House Conference on Education estimated that "With a 5 percent growth rate all of our education expense goals could be achieved by increasing the public educational expenditures to 4.2 percent of GNP."

This does not appear to be an unreasonable goal for a purpose so vital to the nation's security, progress, and welfare. From the economist's viewpoint such an investment is good business, since according to T. W. Schultz, the rate of return on a dollar spent on education is 11 percent, much higher than many other investment opportunities.

Our changing economy places a premium on innovation, skills, mobility, and flexibility. James Reston asked in the *New York Times*, “With unemployment present how do you absorb 3 million new Americans every year while labor-saving automatic machinery is knocking off 1,250,000 jobs every 12 months, and mass production is rising in Japan and Europe?”

Such a difficult question has no *one* answer, but training, retraining, and education, both formal and informal, can make an important contribution.