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## IS EDUCATION WORTH IT?

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For as long as there has been a process even resembling education, there has been a need for a private and public answer to the question: "Is education worth it?" A Greek or Roman merchant wealthy enough to afford an education for his son needed to decide whether to have his son enjoy a highly prestigious education or to train him to follow in his father's footsteps as a successful businessman. Over 200 years ago Adam Smith, one of the first and best known economic theorists, argued that earnings could be increased by improving human capacity and productivity.<sup>4</sup>

Interest in scientific management and an awakened public interest in the efficiency of the school system began about the turn of the century in the Progressive Era in America with John Dewey and pragmatism. Recently, a former United States Commissioner of Education said, ". . . we in education have come to recognize that schools, in addition to being places of learning, are economic enterprises — that a good school is not an accident, but represents a prudent allocation of a community's financial, physical, and human resources . . ."<sup>2</sup>

Although the tools of economic analysis have been available to education for a long time, it is only in relatively recent years that a few educators and economists have made serious attempts to establish theories in economics of education and to make some practical applications to current educational problems. One of the major economic theorists, Theodore Schultz, discovered a need for a theory of human capital when he investigated the relationship of growth in United States national productivity to growth in physical capacity. He found that growth in productivity was much greater than growth in physical capacity and could only attribute the gap to increases in human productivity.<sup>3</sup>

Most studies and theories, like those of Schultz's, deal with state, national, or even world investments and returns in education. Such theories are conceived at the macro level and use gross national product and total government spending on education as the mathematical bases. Quite often macro level principles have meaning in smaller areas of investigation and, therefore, become applicable at micro levels of analysis. For example, increased returns to a community might be the mathematical basis for the micro level output measures. Input measures could come from a school district budget.

### **Approaches to the Economics of Education**

There are several ways of looking at the economics of education and thus various approaches to formulating economic theory. Education is an investment of resources. Some theorists, such as Gary Becker, analyze the payoff on investment in education by studying rates of return. They compare the rates of return for investment in education with rates of return for other kinds of investments elsewhere in the economy.<sup>1</sup> They find that the rates of return to education are not much different than rates of return for other types of investment, but realize the inaccuracies in using rates of return as a measure.

Another major approach to studying the economic effects of education is that of benefit-cost. It is difficult to credit any one man with devising the method of benefit-cost analysis mainly because it has evolved as the most logical way to determine whether or not education pays. In simple terms, benefit-cost analysis involves estimating the costs and benefits and then determining if the benefits outweigh the costs. However, the procedure is more complicated than it may appear since there is an allowance for many more than the immediately observable costs

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and returns. For example, one of the public uses of the analysis is the planning of natural resource use. Before huge dams or watershed projects can be undertaken, there is a need for cautious evaluation of the projected benefits and possible costs. Non-economic societal gains and costs are a necessary projection as well as the actual monetary considerations.

Some more refined benefit-cost methods involve detailed procedures of discounting or appreciating the costs and returns to correct the future benefits in terms of present costs and returns. The value of time and efforts invested in the present could be used to earn interest from investments such as stocks or bonds. To evaluate the returns from an educational investment, there are procedures which inflate the present costs (or deflate the present returns) to allow for their future values. However, all the methods and theories of analysis boil down to essentially this line of questioning: What are the costs? What are the returns? Which is greater?

#### How Can Vocational Agriculture Respond to Critics?

What kind of a response can agriculture teachers make to challenges that question the economic value of high school vocational agriculture? To reply with an accurate answer, there are several costs which a high school vocational agriculture teacher would need to know. Besides the actual or direct costs, such as building expenses, instructor's salary, travel expenses, maintenance costs, and operating supplies, there are student opportunity costs. Instead of enrolling in vocational agriculture classes, a student could take some other course sequence. The increase in income which might result from college graduation would need to be compared with the income of students with similar abilities who were high school vocational agriculture graduates who chose not to attend college. An opportunity cost to students with both types of high school coursework

would be the income a student could earn by dropping out of school and going to work or establishing his own business.

Even more difficult to pinpoint than costs of educating vocational agriculture students is the total return to the investment. First there is a problem of estimating the future income of the graduate. To evaluate the monetary gain from education, it is necessary to estimate the additional income he would receive as a result of education. It is hard to prove that a student is earning more now because of his high school agriculture courses, especially if he is in a non-agriculture occupation. Also there are many social returns that have no assigned monetary value. Who is qualified to place a dollar value on the change in attitude that might be a result of the leadership training in vocational agriculture? A graduate may have learned the worth of self education. He may then utilize the opportunity for self education through careful reading of farm magazines and other farm publications. A vocational agriculture graduate may provide rural leadership and assume community responsibilities which he would not have been able to do without vocational agriculture and FFA experiences.

Unfortunately, very few, if any, elements of an accurate economic evaluation are available to agriculture teachers. Some of the costs and returns are as yet not measurable. Few careful research studies or practical economic evaluations have attempted to investigate those costs and returns which could be measured.

While the problems of social costs and returns in the adult farm management education program are as difficult as for the high school vocational agriculture program, the economic returns are more easily measured. Recent research at the University of Minnesota Agricultural Education Department has made a systematic effort to measure the economic returns to investments in adult farm management education. Because they utilized actual farm business data, these studies had bases for evaluation not available to a researcher who might want to study economic returns to investments in high school vocational agriculture.

#### Minnesota Studies in Economics of Education

The first study at Minnesota which dealt with economic investments in education was Cvancara's 1964 investigation of input-output relationships for 33 farmers who participated in the adult farm management program. He

used a matched control group of 33 farmers who had no farm management education. His results showed a definite advantage to the management program participants, but suggested the possibility of a diminishing returns effect after the second year of management instruction. (See *The Visitor*, April 1965)

The next systematic effort to measure economic returns to an educational input was the 1966 Persons-Swanson study of farmers who participated in the institutional on-farm training program following World War II under Public Laws 346 and 16. They found that the number of vocational agriculture classes attended was a significant predictor of gross income. The other significant variables were: 1.) age at beginning of vocational training in farming, 2.) beginning tenure status, 3.) total beginning capital, and 4.) Mechanical Aptitude Test score. (See *The Visitor*, July 1966)

A research project now in progress involves a detailed investigation of the economic returns to investment in adult vocational agriculture farm management education. The study includes 3,518 end-of-year summaries of farm business records submitted to area vocational technical schools for analysis in 1959 through 1965. To enable comparisons of incomes over a period of several years, a formula was derived to reduce the effects of changes in the economic cycle and natural changes in the agricultural sector of the economy. With some form of constant dollar calculation of income, it is possible to make estimates of the changes a group of farmers could expect in their average earnings as a result of participation in the vocational agriculture farm management program. With the data this study provides, a vocational agriculture instructor can make accurate responses to those who challenge the economic worth of this type of vocational agriculture program.

#### **An Example of a Benefit-Cost Analysis**

Part of the current study devotes attention to benefit-cost analysis. The first step is to calculate the costs. There are several direct costs such as school building and operating expenses, instructor's salary and expenses, farmer's travel expenses and the cost of the record analysis. The most important indirect cost is the farmer's opportunity costs. For purposes of illustration, let us estimate these costs to be \$396.

Because the economic returns are a specific objective of the current study, the eco-

nomie benefits are readily available for analysis. A necessary assumption is that all the farmers enrolled in the farm management classes keep complete, accurate farm records and submit them for analysis at the end of the year. By referring to the section of the current study which includes calculating the average increase in earnings over an eight-year period, it is possible to assume the farmer could expect to make approximately \$690 a year more after enrolling in the adult farm management program.

The benefit-cost ratio for our example is about 1.7. In other words, for every dollar a community invests, it can expect to get \$1.70 in return. The rate of return is thus 170%. The implications for the micro level are great. If a community has an adult farm management class of 45 farmers, the "profits" amount to \$13,230 a year. To a single farm family that means an average increase of about \$560 in yearly income after allowing for the direct and indirect costs of the education which accrue to the farmer.

#### **Difficulties of an Economic Analysis of Education**

Although it is possible to separate out influences on farm income such as weather and price conditions, it is not easy to control for differences in motivation and natural improvements in income as a result of experience. There is an old saying that experience is the best teacher. How true this is in the business of farming is a matter of opinion, but surely there must be some amount of learning as young farmers evaluate the previous year's operations to find weak and strong points. High income motive changes as a farmer grows older and he no longer needs to support dependent children. He thinks more about slowing down or retiring as he starts to consider renting or selling his farm.

The cries of protest that arise in educational circles when there is mention of an economic study of education show that many people are unwilling to evaluate education without due consideration of the aesthetics and moral values that are an integral part of the educational process. Admittedly, there are some serious shortcomings in attempts to answer the question of educational payoffs. One difficulty is the inability to accurately measure the costs and returns in education. There are too many 'if' statements in estimates of income forgone (opportunity costs), future income, and other elements of an economic analysis. No sure statement is possible about the increase in income a

student could realize after graduating from any particular educational system. Likewise, only "educated guesses" are in order about the amount of income a student could be getting if he were working full time instead of going to classes.

Another restrictive aspect of an economic analysis of education is that of measuring sociological returns such as changes in attitudes. Many adult agriculture instructors notice that after a few years of instruction their students are more interested in continuing education for themselves and their children; they become more active in community affairs; they take more interest in the happenings in the local school; and they frequently convince their neighbors that they, too, ought to enroll. Even if it were possible to measure attitude changes as a result of education, only arbitrary monetary value could be assigned to such changes.

Another problem in measuring returns to education is the consumption value of education. Not all education is for future purposes; some people enjoy going to school and receive prestige value from being an educated person. While farm management education is essentially utilitarian, there are some types of education which instruct people in activities such as art and music and, therefore, are not intended to provide direct economic returns. There may be some consumption value in farm management to those farmers who enjoy keeping detailed, accurate records and derive pleasure from knowing exactly how the various enterprises in their farm business are performing aside from their economic performance.

#### Conclusion

Ever since education has had a cost there has been a question of whether or not education is worth it. The relatively recent surge of interest in the economics of education

derives its theoretical and philosophical base from such men as Theodore Schultz, John Dewey, Gary Becker, Sherman Johnson, Milo Peterson and others. Some economic theorists use a human capital approach and treat education as an investment which increases the amount of capital available for use in the economy. Other theorists approach the evaluation of economic returns to educational investments with a benefit-cost analysis. They estimate the total benefits and the total costs and then determine the ratio. There are several other approaches such as the cost approach and the differentials approach, but most theories center around making decisions about whether the returns exceed the investments.

In response to a growing interest in the economics of education, the Agricultural Education Department of the University of Minnesota has initiated a systematic investigation of the adult farm management phase of the vocational agriculture program in the state. The results from these research studies should help answer the critics of vocational education who ask: "Is education worth it?"

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