QUALITY OF SCHOOLING IN RURAL AREAS*

Jerry G. West and Donald D. Osburn

The report of the President's Commission on Rural Poverty stressed the need for improvement in rural schools [4]. Numerous studies have pointed to this need for improvement and have identified ways in which rural schools are inferior to urban schools. The current stress on rural development and improved infrastructure in rural areas further supports the importance of this topic. But what is a good measure of quality when schooling is being considered?

Controversy over the Coleman report illustrates the lack of agreement among educators as to the proper measures or standards [1]. Although economists have typically used achievement tests as measures of output, Gentis has raised questions concerning the relevance of relying solely on measures of cognitive development [2]. He argues that the effect of schooling on affective characteristics, or those which affect the individual's personality structure, are likewise important.

Critics of the Coleman report emphasized the need for further work on the nature of the educational production function and the relative effectiveness of various inputs in the educational process [1]. Recent work in this area suggests the need for further consideration of both outputs and inputs in the production process. In addition to those questions raised with respect to the nature of the output, others such as the kinds of inputs involved, the degree of utilization of inputs, and the technology within which utilization of inputs takes place need to be considered.

MEASURES OF QUALITY

A study reported in 1969 by Stinson and Krahmer suggested expenditure per teacher as a good measure of quality [5]. Their conclusions were based on simple correlations between measures of per teacher expenditure and composite pupil achievement test scores. Test scores on the Iowa Test of Educational Development in North Dakota's school districts were found to be significantly correlated with such expenditure measures as instructional costs, operating cost less transportation, and total cost less transportation when these measures were expressed on a per teacher basis.

Research results from a study of Missouri schools raise some questions about the validity of expenditures per teacher as a proxy for measuring quality. In this study, scores on the Ohio State University Psychological Tests were used as indicators of the quality of schooling provided. Practically all of the state's districts which had high schools in 1964-1965 participated in the testing program and were included in this study.

Expenditure per student, as well as a number of other variables, proved to be as highly correlated with the achievement test scores as expenditures per teacher. (Table 1). Other significant variables included assessed valuation per student, median education of county residents, pupil density, school size, teacher salary, college hours per teacher, and classification of school.

RURAL-URBAN DIFFERENCES

The results also indicate differences between rural and urban schools. While the simple correlations for test scores and expenditure variables were highly significant for urban schools, such was not the case for rural schools. Achievement test scores in rural schools were more highly associated with median

Jerry G. West is professor of agricultural economics and Donald D. Osburn is associate professor of agricultural education and agricultural economics at the University of Missouri.
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TABLE I
SIMPLE CORRELATION COEFFICIENTS BETWEEN OHIO PSYCHOLOGICAL TEST SCORE AND OTHER SELECTED VARIABLES

Variable	Urban Schools	Rural Schools
School Exp./Student	.47	.12
Assessed Valuation /Student	.34	.24
Median Educ. Level	.34	.34
Pupil Density	.24	.09
School Size	.27	.27
Teacher Salary	.57	.18
Percent of Population Under 18	-.14	-.12
College Hours/Teacher	.50	-.04
Expenditure/ Teacher	.36	.13

education level in the local area, school size, classification of school, assessed valuation per student, and teacher salary.

The variables related to achievement test scores in rural schools are apparently quite diverse. They include such factors as parental background, financial ability of the district, and variables associated with progress in consolidation, such as school size and classification. Purely monetary expenditures per student or per teacher would appear to be inadequate measures of quality in rural Missouri schools.

Results from a multiple regression analysis using essentially the same variables indicated similar relationships. In rural schools, the valuation per student, educational level of district residents, and school classification were all found to be significant factors when the Ohio Psychological Test Score was used as the dependent variable. When both urban and rural schools were considered together, the salary and school size variables were significant. It is noteworthy that expenditure per teacher was not significant.

Both the Missouri and North Dakota studies are subject to the same limitations characteristic of most analyses of economic productivity of schooling. The estimated relationships are really average production relationships rather than points on true production functions. There is very little basis for the assumption that the school systems were operating in an "optimal" fashion when the data were obtained. Such limitations are no doubt of particular importance when rural schools are considered. Unless consolidation moves rapidly enough to offset declining population in rural areas, the school's facilities are used at less than capacity and the teachers have classes smaller than necessary.

Results in the Missouri study do support the idea that a serious difference in quality exists between rural and urban schools. The average score on the Ohio State University Psychological Test for the group of smallest rural schools was 43.6 compared to 56.5 in the larger urban schools (Table II). The average score for all urban schools was 15 percent higher than for all rural schools.

Implications

This study does not provide the final answer as to ways of enhancing the quality of schooling in rural areas. However, it does suggest that something more than merely increasing expenditure per teacher is

TABLE II
AVERAGE OHIO STATE UNIVERSITY PSYCHOLOGICAL TEST SCORES FOR SCHOOLS OF VARIOUS SIZES IN URBAN AND RURAL AREAS OF MISSOURI

Size of School	Urban	Rural
0 -199	---	43.6
200 - 399	48.3	44.8
400 - 599	48.0	45.5
600 - 999	51.8	) 52.2
1000 - and over	56.5	)
Average	50.9	44.3

required. Although some of the variables, such as educational level of district residents, cannot be controlled, others are subject to influence by public policy. Size and classification of schools (based on breadth of curriculum) are subject to change and emphasize the importance of school consolidation programs. Where consolidation is not feasible other means must be sought to provide rural youth with educational opportunities comparable to urban youth.

Recent research suggests that output or quality of schooling (again in terms of cognitive development) is not significantly affected by teacher experience or hours of graduate credit [3]. This study likewise found little relationship between achievement and number of college hours per teacher (r = -.04). Increased expenditure by schools for the purpose of purchasing improved quality of teaching inputs, with quality levels reflected by teacher experience and college hours, is apparently a highly suspect policy. If this practice is questionable, how much easier it would be to spend money for other wrong things and not enhance the real quality of education.

These research findings highlight the need for continuous efforts to specify the relevant outputs of the educational system as well as the optimum input levels. Such information is crucial to good decisions with respect to human resource development in rural areas.

REFERENCES

[1] Bowles, Samuel, and Henry M. Levin, "The Determinants of Scholastic Achievement–An Appraisal of Some Recent Evidence," *The Journal of Human Resources,* 3:3-24, 1968.

[2] Gentis, Herbert, "Education, Technology, and the Characteristics of Worker Productivity," *American Economic Review,* 61:266-279, May, 1971.

[3] Hanushek, Eric, "Teacher Characteristics and Gains in Student Achievement: Estimation Using Micro Data," *American Economic Review,* 61: 380-388, May 1971.

[4] National Advisory Commission on Rural Poverty, *The People Left Behind,* Washington, 1967, pp. 41-57.

[5] Stinson, Thomas F., and Edward F. Krahmer, "Local School Expenditures and Educational Quality: A Correlation Analysis," *American Journal of Agricultural Economics,* 51:1553-1556, Dec. 1969.