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AUTHOR	White, Bayla F.
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ABSTRACT

This paper presents a method for the development of a rating or classification system for assessing the performance of schools within a local school system. It is designed as a tool to improve local school management and to raise the level of dialogue between school officials and the public. Since it may be misleading to compare the performance of every school in a large system, those schools with similar student populations are grouped into categories. The author describes what a classification system is and how it will operate, and offers some examples of specific status variables that might be used to assign schools to categories. An illustrative list of measure of student performance (based on available or readily obtainable data) is described, together with the limitations and difficulties of such a classification-rating system. A social-economic occupational rating scale and a 27-item bibliography are included. (Author)

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Design for a School Rating or Classification System

Bayla F. White

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A B S T R A C T

This paper presents a method for the development of a school classification system for use in a local school district. The paper describes what a classification system is and how it will operate. It offers some examples of specific status variables which might be used to assign schools to categories and an illustrative list of measures of student performance. The paper concludes with a discussion of the possible uses and limitations of a classification system at the local level.

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I. INTRODUCTION

Public elementary and secondary education is the nation's second largest industry. Each year, quantities of resources are poured into local school systems to be used in the education of a captive audience of students, and each year another group of students leaves the public school system, either marking the end of their formal education or the beginning of another phase.

Measuring the success of the public education system is an extremely difficult process, because education clearly has multiple benefits to the individual and to society. There are problems in knowing what to measure, when, and how. As a result, the performance of an educational system--in terms of the benefits accruing to students--is rarely assessed in a systematic way. But because the performance of a school system cannot be measured precisely should not rule out attempts to make some assessment.

Assessing local education will be of maximum benefit to a community only when at least three conditions are met: the assessment is ongoing and continuous; the results of the assessment are made public, to improve the quality of public debate about education; and, most importantly, the results of the assessments are used to affect educational policy and practice.

A rating or classification system[1] is outlined here for use in efforts to improve the educational process at the local level. This system is designed to yield a body of information hitherto available only piecemeal to local school officials and to the public. It focuses on objectives deemed critical at the local level, selecting and ordering information regarding progress toward those objectives. The system is based on several assumptions about a local public educational system:

(1) Efforts to improve education must be linked to a regular assessment of educational performance throughout the public educational system. A logical consequence of this first and most basic assumption is the idea that definable objectives exist and that progress toward at least some of them can be measured.

(2) The school is a basic operational unit of a local system in terms of the assignment of students, staff, and the allocation of resources, and is therefore a natural unit to be used in assessing educational performance.

(3) To simultaneously examine the performance of each school in a large school system in relation to every other school would be unwieldy and unproductive. It follows that schools should be classified according to similar

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[1] The terms "classification system" and "rating system" are used interchangeably throughout this paper.

characteristics such that the performance of all schools in any one category can be expected, a priori, to be similar.

The resulting assessment of educational performance, in light of certain constraints--largely uncontrollable environmental variables--should be useful in determining how schools are performing, compared with local objectives; for identifying problems and isolating particular trouble spots; for rewarding unexpectedly high performance; for making decisions on the allocation of resources; and for designing comprehensive evaluations of particular programs or educational approaches.

Many different assessments of performance within local school systems have been attempted in recent years. Some have been conducted by educational evaluators; others, by citizen groups. Some have dealt with all levels of education, while others have focused on a particular age group or type of school. Some have been highly quantitative inquiries into educational costs and benefits, while others have been qualitative appraisals of the educational process.

Some assessments were heeded; others were not. Some directly affected local policy decisions; others were primarily academic exercises, adding to the store of knowledge about the determinants of educational success. The method of assessment described here is distinguished by the following factors: it is concerned with all schools in a system; it is meant to be carried out annually; it relies on data which are available or can be readily obtained; and, it concentrates on measures of student performance or other educational outcomes.

The following section describes the school classification system and how it operates. Sections III, IV, and V discuss the categories of data which make up the system, with some examples of the specific kinds of data which could be included. Section VI addresses the question of the purpose of assessment--who might use the system and for what; and the final section describes some limitations of the system.

II. A SCHOOL RATING OR CLASSIFICATION SYSTEM

The classification system outlined here requires collection of three types of data: (1) environmental or status variables, used to group schools serving similar populations in classes or categories; (2) measures of educational output,[1] against which performance is assessed; and (3) input variables, which are not themselves used in the rating system, but which are necessary to interpret the performance observed.

Status Variables

An environmental or status variable is thought to affect the educational outcomes which have been identified, but it is an element in the educational process over which the schools have little control. The status variables fall into two groups: those which, taken together, describe the characteristics of the student body of a school; and those which describe the social and economic climate of the neighborhood in which the process of education occurs.

The primary data source for the two groups of variables differs. Student body characteristics can be based on data collected from the students, their teachers, or school records, whereas neighborhood characteristics can be obtained from census or census-type data. Although census data have been used in other studies[2] to determine student body characteristics for individual schools, use of the census as the primary data source in a systematic, annual classification scheme is not recommended. Indicators of student body characteristics should be as current and as accurate as possible. Census data become out of date all too quickly, especially for describing particular neighborhood populations. School attendance boundaries, where they exist, do not necessarily coincide with census tract boundaries, which makes it difficult to relate census characteristics to a particular school. Also, as the proportion of students who either commute or are bused to a school increases, the usefulness of socioeconomic indicators derived from census tract data decreases. Finally, demographic information on the households in a school attendance area extrapolated from the census include data on families without school age children or with children in nonpublic schools, further diluting the accuracy of the data for a given school.

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1 The terms: output measures, outputs, and educational outcomes are used interchangeably throughout this paper.

2 For example: Patricia Sexton, Education and Income; Jesse Burkhead, et al., Inputs and Outputs in Large City High Schools; and Robert Havighurst, The Public Schools of Chicago. See Bibliography.

Data on the characteristics of the neighborhood in which the school is located are used to indicate the neighborhood environment in which education occurs. These characteristics are in a sense independent of the characteristics of the student body of a particular school. Because of this, the problems mentioned in the preceding paragraph are not relevant and census data--especially 1970 data, when available--can be used to describe the neighborhood environment.

Output Measures

Measures of educational outcomes are the central feature of the classification system proposed here. The output measures offered, however, are only suggested as indicators of the performance of the educational system. The ideal rating system would utilize a series of output measures which, taken together, describe progress towards the objectives of local education in the community under study. Unfortunately, the state of the art is such that it is impossible to measure with equal precision all aspects of educational performance. Moreover, it is difficult to develop an exhaustive list of objectives for local school systems without reference to specific conditions that exist there. The initial set of output measures (described in Section IV) is, therefore, illustrative of the kinds of measures which could be included in a classification system, and is in no sense exhaustive.

The measures discussed in this paper deal primarily with student academic performance and attitudes, although it is possible to develop additional outputs that measure performance in other aspects of the educational process. Some of the measures apply to a particular grade level, whereas others can be applied throughout the 12 grades. Some of the measures rely on existing data collected by the schools, perhaps organized in a new way; other measures would require the generation and analysis of new data. Most of the outputs are short-term measures of pupil performance, recorded either at one point in time or averaged over the school year.

Since few of the output measures are based on longitudinal pupil records, this classification system will not generate information on the long-term effects of education for particular cohorts of students. But the annual measurement in this rating system can be used to identify and describe the trends in performance which occur in a particular school. In addition, for the subset of schools in any district in which the socioeconomic status does not change too much over time (several years), an examination of trends on the same set of output measures would provide an alternative to longitudinal assessments of student performance. Ultimately, a classification system should contain both cross-sectional and longitudinal measures of pupil performance, to provide information on the long-term effects of education.

Inputs

Although a classification system can be built around status variables and output measures, the observed performance cannot be properly evaluated without some information on the inputs to each school. Facilities and

services, personnel, and fiscal resources at each school are treated as input variables here because they represent aspects of the educational process over which the school administration has some control.

The distinction between variables designated as inputs and those identified as classifying variables is arbitrary and subject to revision and modification. Although input variables are perhaps the easiest type of data to define, the collection of this information may pose the most difficult problems. The difficulty stems from the need for the time period measured by the outputs and inputs to coincide. Resources put into a school between September and June of a given year, for example, have little or no effect on student performance measured during the first month of school.

Products of the System

The product is information, and the critical question is the kind of information that will be generated as a result of the data collection activity. The table shells below illustrate the type of data which can be generated by a classification system. These tables utilize only the status and output variables, but it would be possible (and probably desirable) to produce similar sets of tables for input variables for each category of school and for various combinations of input and output variables.

A. Assignment of Individual Schools to Categories

Based on the status variables, all of the schools in the district are grouped into categories. The determination of which combinations of status variables are used and the boundaries for each cell or category of schools will depend on the particular needs of the school district. Several different methods of classifying the schools should probably be tried. For example, using only three of the five status variables[1] identified (occupational status and educational level of parents and racial composition), a tentative classification might be derived as follows:

1. Occupation of head of household--divided into three categories representing high, medium, and low-status schools.

2. Educational attainment of parent(s)--divided into schools which are above the average (mean) for all schools and schools which are below the average (mean).

3. Racial composition--divided into three categories to indicate schools which are 0-20 percent Negro; 21-80 percent Negro; 81-100 percent Negro.

The schools in the district would thus be assigned to 18 cells or categories, and the remaining two status variables could be used to "tag" schools within

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[1] For a more complete discussion of the status variables, see pp. 9-11.

the 18 cells. That is, the schools with the highest student mobility rate (the highest 10 percent) might be marked with an asterisk (*), and schools with the highest environment index (the high 10 percent in the city) might be marked with a dagger (†). Each school in the district would be assigned to one of the 18 cells or ca ries,[1] as shown in Table A.

Table A: Eighteen Possible Categories of Schools

	Individual school score on status variables				
	1	2	3	4	5
Category A Individual schools listed by name or number					
Category B Individual schools listed by name or number					
Category C Individual schools listed by name or number					
Category D					
Category R					

B. Actual Scores and Rankings on Output Measures for Schools within Each Category

Schools within each category can be identified on a single table to show their score on output measures and their relative ranking on each output measure for all schools within that particular category. No overall rank can or will be indicated, since the output measures are not equally important and the rankings are not additive. Ranks on any output variable should be related to the average and range of variation shown in Table C. A separate table would be produced for each category of schools.

[1] Since it is quite likely that some of the 18 cells will be vacant, the final number of categories of schools resulting from this example would be fewer than 18.

Table B: Category C Schools (n schools)

Score on output measure					School	Rank on output measure (out of n)					
a	b	c	d	 x		a	b	c	d	.....	x
					#1	10	7	4	8		12
					#2	1	4	3	9		4
					#3						
					#4						
					--						
					--						
					#n						

C. Summary Profile of Each Category of Schools

For each category identified, summary data are presented on the total number of schools in the category--the mean, lowest, and highest entry on each of the classifying and output variables. This table shows the mean performance on each variable for each category or class of schools and the range in performance among all schools in that category.

Table C: Summary Profile of Each Category

Schools	Status variables					Output measures[1]			
	1	2	3	4	5	a	b	c	d x
Category A (n schools)									
Mean score									
Lowest score									
Highest score									
Category B (n schools)									
Mean score									
Lowest score									
Highest score									
Category C (n schools)									
Category R (n schools)									

[1] Each output measure displayed consists of only one statistic. Thus, reading achievement at a particular grade could be described by several different output measures (median, standard deviation, 25th percentile, etc.). The mean and range of scores for each output measure is shown.

D. Individual School Profile

A detailed profile for each school in the district is prepared, showing the characteristics of the student body, the category to which the school belongs, its rank on each output variable (relative to other schools in its category), the range for each variable, and the actual score on that variable.

Table D: School #2 in Category C

Status Variable	Rank n	Range for category C	Actual score on status variable
# 1			
# 2			
# 3			
# 4			
# 5			

Output measure	Rank n	Range for category C	Actual score on output measure
a. Mean test score - 4th grade reading	1	6.3 - 4.0	6.3
b.			
--			
--			
n.			

III. STATUS OR ENVIRONMENTAL VARIABLES: SOME EXAMPLES

Index of the Occupation of the Head of Household

The head of household and occupation will be identified from either existing pupil records or information collected from a representative sample of students. To develop an index number for each school,[1] a list of common occupations is used, such as that shown in the Appendix. Occupations can be added as necessary to cover the range of jobs in a community (or to cover the types of jobs likely to be held by women), and categories can be manipulated to reflect the occupational structure of the area. A number is assigned to each category of occupations, and numbers corresponding to the occupations in a given school are averaged to produce the school score, or index. This school index then becomes the variable used in the measure of student body characteristics.

One problem should be mentioned in connection with this variable. The use of occupation level in determining measures of socioeconomic status implies that occupation is a surrogate for family income, which is the critical SES variable. Occupational status alone may be adequate if the head of household is employed full-time, but may overestimate income if occupation and status of employment differ markedly. That is, the head of household may be trained as a carpenter, but may be chronically unemployed or employed only part-time or seasonally. However, since this classification system is concerned primarily with short-term measures of student performance, the effect of employment status on the index developed to indicate student body characteristics may, in fact, be negligible. To determine the relationship between occupation and employment status, it may be necessary to obtain data on both for each household head, and employment status may then become a separate description of student body characteristics.

Education Level of Parent(s)

Data should be collected from each student (or from a sample of students) on the highest grade completed by each parent. The mean years of school completed by parents is computed for each school. For elementary schools, which are assumed to have more homogeneous populations, mean years of school completed may be a sufficient indicator of educational level. For junior and senior high schools, additional indicators may be needed to describe the distribution of educational attainment of parents within a school.

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[1] The system described here is based on the one developed as part of the Quality Measurement Project in New York State. See School Quality Workbook, Bibliography, p. 29.

Racial Composition

Racial composition is expressed in terms of the proportion of Negro students in the total school enrollment. For a school system with more than one sizable minority group in its population, the racial composition could be further divided. Data to determine the racial composition of the school should be readily available either from student records or by means of a head count made by classroom teachers. Figures on racial composition can be derived either from data on all students or from data collected from a random sample.

Initially, the measure of racial composition can be based on data from one point in time, on the assumption that racial composition does not change significantly during one school year. If this assumption is unwarranted, then racial data will have to be collected at least twice, and an average figure (or both figures) used. Collection of data on racial composition for the school as a whole also assumes that the composition is the same throughout all grades. If this assumption is unwarranted, data may have to be collected from each grade.

Student Mobility for the Current School Year

Student mobility[1] for the academic year during which the output measures are taken is considered to be a descriptor of the conditions under which the process of education occurs. Except in school districts which undertake to transfer large numbers of students during a school year, student mobility is assumed to result from actions taken by the students' families and is therefore beyond the control of the local school officials.

Neighborhood Environment

As explained earlier, data can be collected on several indicators which describe the economic and social conditions of the neighborhood from the census or other available population surveys. The following list contains examples of the kinds of data which could be gathered for each school attendance area:

-- Percentage of owner occupied housing (as an indicator of neighborhood stability).

-- Percentage of overcrowding (assumes a relation to study habits, home living conditions).

-- Unemployment rate for adult males (over 21).

-- A measure of the incidence of crime.

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[1] Mobility is here defined as the sum of (a) total number of students entering the school after the formal opening of the school year and (b) total number of students leaving the school during the school year, divided by ADM for the school.

-- Infant mortality rate (or other health status indicator).

-- Median family income.

-- Percentage of families with annual incomes below $3,000.

If possible, a single index of neighborhood environment should be developed, using a procedure similar to that described for determining occupational level.

IV. MEASURES OF EDUCATIONAL OUTCOME

Achievement Test Scores (Basic Skills Development)

Data from existing achievement test programs can be analyzed to provide a pattern of achievement in each school for the current year. The following six statistics are presented for each grade tested (and for each of several subtests): mean, standard deviation, and 10th, 25th, 50th and 75th percentile scores. If an annual testing program exists, changes in achievement can be included as a measure of pupil performance. Since pupil achievement is one of the most commonly used measures of pupil performance, data for this output measure are expected to be readily available in a local school district. Initially, test data are shown for each grade tested, on the assumption that the pattern of achievement may vary from grade to grade.[1] If it is demonstrated that achievement patterns are similar for all grades tested within a school, statistics on academic achievement from a single grade can be used to represent performance for the whole school.

Ability to Read and Understand a Local Newspaper by Grade Six (Basic Skills Development)

The ability to read and understand a local newspaper represents one way to establish a minimum level of skill development to be attained by all students after six years of school. A new test would have to be devised for this measure: it should be brief, easy to administer, and simple to score. Whether the tests are administered to a sample of sixth graders or to all sixth graders is a decision which can be deferred until the test is actually developed and problems of validity and reliability overcome.

There is also nothing magic in the selection of the sixth grade as the point at which to measure minimum skill development, or in the selection of a local newspaper as the basis for comparison. One could argue that by the end of the second grade every child ought to be able to read and that a test of reading ability should be administered to second grade students. What is important is the concept of establishing minimum skill levels.

Ability of High School Senior to Perform at Eighth-Grade Level on Standard Achievement Tests or Similar Examinations (Basic Skills Development)

Like the previous measure, the ability of high school students to perform at an eighth-grade level on standard achievement tests for reading and mathematics is an attempt to establish minimum standards of performance. The State of California has recently adopted a similar performance criterion --by the 1971/72 school year, high school students must demonstrate an

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[1] See G.E. TEMPO report entitled "Survey and Analysis of Results from Title I Funding for Compensatory Education," especially Chapter 2, in Bibliography.

eighth-grade competency in reading and mathematics to graduate.[1] The measure of performance at an eighth-grade level is not offered here as a condition for graduation, but as an indicator of educational attainment. The proportion of twelfth-grade students who meet this minimum is, in turn, measured for each high school in the district.

Change in Performance Over Time

While most of the measures of performance included in a classification system are measures of short-term performance, the system should be structured so as to collect long-term measures of pupil and school performance. For example, two long-term indicators of change in performance in the basic skills area that could be provided are longitudinal changes in performance and cross-sectional comparisons of performance. Neither measure is without its limitations, however.

Measuring changes over time in student achievement at each school depends upon the existence of longitudinal records on students, which indicate test performance and identify the school(s) attended by each pupil. Students who have attended the school for a given length of time would be identified from these records. Gain scores could be developed for these students and compared with the actual scores of the students. In other words, this output measure might show, in 1973, an average gain in achievement after four years for students who were enrolled in Grade 2 at school X in 1969. The change in performance determined in this manner, however, will probably not be representative of the performance of all children who attended school X during the four-year period because this output measure is based on an examination of gain scores only for that subset of students who remained at the school for the entire period. Without further analysis of the characteristics of these nonmobile students, it would be impossible to tell if this group of pupils is similar across all schools within a particular category and if it is fair to compare the gain scores among schools within the same class.

Another imperfect indicator of performance over short periods of time (2 to 3 years) is based on a comparison of performance on achievement tests or on minimum skill standards for different groups of students. That is, the comparison would be between the performance of fourth graders in school X in 1969 with the performance of a different set of fourth graders in school X in 1973. Assuming the socioeconomic status of school X has not changed significantly over the period in question (which could be verified using the information maintained on status variables) and that the tests permit comparisons, several assumptions could be tested about the performance of students in school X over time: (1) The distribution of performance has not changed over time; (2) the changes in the distribution of performance at school X are similar to changes in the distribution of performance for other schools in that class or category; and (3) the changes in performance are similar for all classes of schools.

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[1] Cited in "Report on Education of the Disadvantaged," Vol. 3 (No. 1), January 7, 1970, p. 3.

Postsecondary Education (Post-High School Experience)

The classification system is designed to include several measures of the rate at which high school graduates continue their education. During an academic year, the proportion of seniors in each high school who request transcripts sent to technical, community, or junior colleges or four-year universities can be recorded as a measure of intent to continue education. Data for this output measure can be gathered from pupil personnel service records at each school. The senior class can be surveyed at the end of the school year to determine the percentage of students actually accepted for full-time, post-high school education. Finally, after one year, a follow-up survey can be conducted to determine the proportion of students still enrolled in some form of post-secondary education. Any changes in these output measures from the previous year are then computed. Thus, initially, the measures of postsecondary education will not distinguish among the various kinds of postsecondary training, but later it may be desirable to distinguish between enrollment at technical institutes, two-year colleges, four year "highly rated" colleges, and other four-year colleges.

Postsecondary Employment (Post-High School Experience)

To collect data on students for whom high school graduation marks the termination of formal education, seniors can be surveyed at the end of the school year to determine what proportion of each class plans to enter the labor force full time. This total will initially include females, although allowance will have to be made for those who choose to become housewives and not enter the labor force. A follow-up survey of students, either after three or nine months, can be used to determine what proportion of those who wanted to work full time have actually found full-time employment and what type of employment. Finally, based on the response to the follow-up survey, the proportion of graduates (by school) who are employed in low-skill, low-pay, dead-end jobs is determined. Any changes in these output measures from the previous year will be computed.

Dropouts (Holding Power)

The question of dropouts can be considered from several different perspectives. First, a dropout rate can be computed for each school. A student is considered a dropout if he withdraws or is expelled from school, not if he transfers to another school or even another school district. It may be desirable to calculate a dropout rate for each grade or age level, if experience indicates that the rate varies widely. Second, the change in the rate from the previous school year is computed. Finally, by means of a follow-up survey, an attempt is made to determine what happens to dropouts: what proportion is working full time and in what kinds of occupations.

Attendance Patterns (Attitudes)

Attendance at school can be viewed as a reflection of pupil interest and attitudes toward school.[1] Although average attendance rates are computed for each school and changes in the rate from the previous year are noted, this is a weak output measure for ages at which attendance is compulsory. Variations in average pupil attendance from school to school are expected to be small, as are changes in the attendance rate from year to year.

Another and perhaps more sensitive measure of attendance can be obtained by developing an index of pupil tardiness or truancy (classes cut or parts of the day missed) for each school. An average daily tardiness/truancy rate can be computed from sample data obtained from teachers' attendance records. Attendance output measures can be used for both elementary and secondary schools, with changes from the previous year recorded.

Vandalism: Willful Damage to School Property (Attitudes)

At the end of each school year, a vandalism rate (costs attributable to vandalism ÷ ADM) can be computed for each school as an indicator of student and community concern for the institution of education. Changes in the rate of property damage from year to year are recorded.

Disciplinary Actions (Attitudes)

Another index of student attitudes and behavior can be measured by disciplinary actions (suspensions, expulsions, arrests) for each school, as well as the change in the rate from the previous year.

Parent-Teacher Contacts (Attitudes)

Two output measures based on conferences between parent and teachers are suggested as measures of attitudes toward school. The first, which is intended as an indicator of parental interest and concern, is expressed as the ratio of parent-initiated conferences to the total number of parent-teacher conferences. Data can be obtained from a sample of teachers and then extrapolated to provide a ratio for the school as a whole. It is assumed that a higher proportion of parent-initiated conferences reflects more interest and concern on the part of the parents.

The second indicator in this set classifies parent-teacher conferences by two subject categories: academic conferences and disciplinary conferences. The output measure is expressed in terms of the ratio of academic to disciplinary conferences for the school as a whole. Data can be collected from

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[1] Attendance may also be viewed as a measure of the health status of the students.

a sample of teachers. The ratio derived from this exercise is suggested as a reflection of the classroom behavior of students in the school.

Change in Pupil Self-Esteem and Attitudes Toward School (Attitudes)

A questionnaire can be administered to a sample of students at both elementary and secondary levels to assess their attitudes about themselves and about school. The questionnaire should be administered both at the beginning and at the end of the academic year and changes in attitudes recorded.

Summary

The chart which appears below summarizes the measures of student performance and attitudes suggested for use in the classification system.

OUTPUT MEASURES	MEASURES WHAT	EDUCATIONAL LEVEL	SOURCE OF DATA
1. Achievement tests mean, standard deviation 10th percentile 25th percentile 50th percentile 75th percentile	Basic skills development	E & S	Existing records
2. Ability to understand local newspaper	Basic skills development	E	Special Test
3. Ability to perform at 8th grade level by grade 12	Basic skills development	S	Special Test
4. Gain in achievement over time	Basic skills development		Longitudinal records
5. Postsecondary education % requesting transcripts % admitted to postsecondary education % completing one year in post-secondary education	Effects of skill development	S	Student records and follow-up
6. Employment % planning to enter labor market full time % employed full time after 3 or 9 months % employed in low-skill jobs	Effects of skill development	S	Student records and follow-up
7. Dropouts % of ADM Change from previous year % working full time % in low-skill jobs	Holding power	S E?	School records and student follow-up

OUTPUT MEASURES	MEASURES WHAT	EDUCATIONAL LEVEL	SOURCE OF DATA
8. Attendance patterns School average Change from previous year Tardiness and truancy index	Attitudes	E & S	School records
9. Vandalism Costs/ADM Change from previous year	Attitudes	E & S	Financial records
10. Disciplinary actions % of ADM Change from previous year	Attitudes	E & S	School records
11. Parent-teacher contacts Ratio of parent initiated conferences to total Ratio of academic conferences to disciplinary conferences	Attitudes	E & S	Teacher survey
12. Change in pupil attitudes toward self and school	Attitudes	E & S	Student survey

V. INPUTS

The following list illustrates the kinds of input data which should be collected for each school in the system. The input data should be used in interpreting performance on the measures of output. Some of the input variables could also be used in the initial assignment of individual schools to classes.

A. Facilities and services

1. School size, average class size

2. Extent of overcrowding

3. Availability of special facilities and equipment.

4. Range of courses offered.

5. Availability and extent of special academic programs (for the gifted, for physically or mentally handicapped, for remediation).

6. Availability and extent of special pupil personnel services (counseling, psychiatric, and social services).

7. Faculty-student ratios:

   a. Full-time equivalent teachers: ADM
   b. Full-time equivalent support staff: ADM
   c. Full-time equivalent paraprofessional staff: ADM

B. Personnel

1. Staff composition: age, sex, race.

2. Proportion of teaching staff with permanent certification.

3. Experience

   a. Median years of teaching experience.
   b. Proportion with less than 3 years of teaching experience.
   c. Proportion with more than 10 years of teaching experience.

4. Training

   a. Proportion with B.A. and no other formal training.
   b. Proportion with a B.A. and 30 or more credit hours.
   c. Proportion who have completed at least 80 clock hours of training within the 12 months preceding the opening of the current school year.

5. Turnover

   a. Proportion of total teaching time (in man-years) filled by substitutes.
   b. Turnover rate for previous and for current school year.

C. Resources

1. Instructional costs per pupil.

2. Adjusted instructional costs per pupil (computed by using an average cost factor for each personnel category to minimize distortions due to seniority).

   a. For teaching and administrative staff.
   b. For support staff.
   c. For paraprofessional staff.

3. Costs per pupil for equipment, books, and materials.

VI. USING A SCHOOL CLASSIFICATION SYSTEM

Both school officials and community or parent groups would find a school classification system useful, since both are concerned about the quality of public education, although they may differ in their judgments about how to bring about educational change. Once a school classification system is installed, both community groups and school officials can use the annually published results in their appraisals of school performance. However, the decision to install the system and the financial support for data collection and analysis will have to come from school officials.

The classification scheme described in this paper relies on the maintenance, collection, and analysis of data on performance in every school in a local district. Data must be collected in a regular, continuous, and uniform manner. Except in rare instances, local groups outside the school system do not have the staff, the financial resources, or access to educational records necessary to establish and maintain a classification system. The volume of data generated in a comprehensive classification system--even one which uses only four or five output measures--requires automated processing and investments of money and manpower beyond the capacities of the typical parent or community organization.

In view of their virtual monopoly on data and resources, the endorsement of school officials--the superintendent and his staff and/or the local school board--is a necessary prerequisite to the implementation of any classification system. Not only is such endorsement necessary before initial installation of a rating system, but it will have to include a commitment of two or three years for developing and testing the system. During the first year, the system will have to be refined, and decisions made on which output measures to use and the most efficient ways of collecting and processing the data. It may be possible to collect data during the first year or it may be necessary to postpone initial data collection to the second year. But once appropriate measures and data collection procedures have been decided, the trial period of actual data collection and analysis for all schools should extend over at least two complete school years to test the sensitivity and usefulness of each of the measures used in the system.

Implicit in the selection and rejection of performance measures is the articulation of a set of goals for the local education system. Thus, the keystone to the classification system is discussions regarding the objectives of the local school system and which measures of performance are appropriate to these objectives. Decisions about objectives and performance measures should not be made by default, nor should discussions of these matters be restricted to local school officials; rather, these should be developed through continual dialogue between the educational establishment and the interested public. In making public the contents of the classification system on an annual basis, school officials provide a statement of

at least some of the objectives and performance criteria they consider important. That statement, coupled with the information about student characteristics and performance which the classification system presents, should provide the interested public with the kinds of hitherto unavailable information needed to carry on a constructive discussion about the future directions of local education. Equally important to both school officials and the general public is the annual publication of data on student performance on a school-by-school basis.

To be of maximum usefulness, data collected in the annual classification study should be released at a time when the projected budget for the coming year is under review, when both school officials and the interested public can use the information to improve the quality of discussion about financing local education.

The information provided by a classification system enables the school administration and the community to focus more clearly and precisely on several important aspects of public education. By identifying and classifying schools on the basis of pupil populations, the system provides a method for determining what each school is accomplishing for the students it serves, in relation to other schools serving similar populations.

To borrow an analogy from medicine, the pattern of individual school performance is like the chart kept on a patient: The output measures represent important clues to the overall "health" of the school; prescriptions for change could be designed to correct the deficiencies detected. Comparing performance of relatively similar schools also provides a means of pinpointing either the areas (e.g., job placement after graduation) which are particularly troublesome for either types of schools or particular schools in which performance falls below expectations. In both cases, the classification system will not indicate why problems exist, but can be used to design procedures for determining causes.

A classification system does not merely identify problems, it also identifies success. Schools in which performance exceeds expectations, or areas of performance in which particular schools excel can serve as models for other schools to follow.

VII. LIMITING FACTORS IN THE DEVELOPMENT OF A CLASSIFICATION SYSTEM

No discussion of a school classification system would be complete without a few paragraphs on the factors which may limit its usefulness. The problems identified thus far fall into two broad categories: conceptual and technical. The conceptual problems are perhaps the more basic of the two, since they call into question the efficacy of attempting to create a classification system at all, but the technical problems may in fact be the more important. If a classification scheme is technically impossible or impractical, all the good intentions in the world cannot make the system work.

Technical Problems

While this paper has not dealt in depth with the analytical processes and problems which are likely to be encountered in making a classification system operational, some specific problems associated with individual measures have been discussed above. A classification system is predicated on the assumption that a set of objective measures can be identified which describe the pupils in a school and which are relevant to the goals of the local educational system. Therefore, the system is only as good as the variables it uses. It is not at all certain that objective measures of more than a very few aspects of education can be delineated with any degree of consistency or accuracy.[1] The very process of institutionalizing the measurement of some, rather than all, of the goals of local education may produce an undesirable inflexibility in the educational system. That is, the specific skills which are being measured will be emphasized, while those which are not measured may be ignored or deemphasized.

A classification system takes the pulse of the school system annually, but most of the measures which are likely to be included in the system actually cover less than a calendar year. One can question whether such short-term measures of progress are appropriate to use in an assessment of the educational process, which is long-range in impact on students and by nature complex. There is also the problem of whether measures of performance that are included in the system can be sensitive to the changes which occur in student performance and/or behavior even over the course of the school year. Moreover, the classification system assumes that performance on the educational outputs which are being measured is attributable to the school. But the classification system will not indicate causes of observed changes in performance, which could result from variables within the school or elsewhere. Neither of these possibilities is taken into account when the schools are grouped into classes based on status or environmental variables.

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[1] This is a problem common to all educational research and evaluations, not simply school classification systems.

Conceptual Problems

One of the conceptual difficulties in implementing a classification system is the chicken and egg argument--which comes first, the delineation of specific educational objectives or the selection of appropriate measures of performance? That is, does the construction of a classification system influence the formation of objectives? Although the latter was used in this paper, it can be argued that it is essential to define objectives for local education before undertaking the development or installation of a classification system.

Another conceptual objection is that the information generated by the system may do no more than document the obvious. Any school official or interested citizen--so the argument goes--can predict which schools are the "best" and which are the "worst," without going through the complex procedures of classifying schools and recording performance. Moreover, the classification system will not provide guidelines on what to do about the performance in average schools. School officials and the public want to know not merely what is occurring in the schools, but why and how to correct deficiencies. A classification system only serves as the basis for designing further studies.

The commitments of time effort and resources required to implement a classification system may exceed the value of the information it yields. No attempt has been made to put a price tag on the system described in this paper, since it illustrated more variables than any one school system is likely to need. Some of the variables described in this paper are based on data already available in a school system (e.g., dropouts or disciplinary actions), whereas others require the generation and collection of information which is easily obtainable but not usually recorded by local school systems (e.g., status variables). Still other variables suggested here would require the development of new measures of student performance, which could be very costly.

This school classification system is offered as a simple but functional tool to be used in assessing performance within a local school system. Yet there is a conflict between the goals of simplicity and utility and the desire for accuracy and precision. To be of maximum usefulness to groups other than the community of educational researchers, the classification system should be based on a few easily understood, but crucial variables; yet the simpler the system, the less accurate and the less comprehensive is the information it yields. On the other hand, as the number of variables included in the system increases, more data and more interpretation are required, and the system may become too cumbersome to be of use to more than a select few.

Finally, the single most important objection to undertaking the development of a classification system--with all its limitations--is whether it will ever be used by local decision-makers. There is no point in proceeding with the development of the system if its appeal is limited to the research community. Local officials should be interested in the possibilities the system offers to improve the information base on which educational policy is formulated, but they must also be willing to apply the information produced by the system. In the absence of that willingness, the data produced by any classification system will be added to the list of contributions to educational research which are gathering dust on school system shelves.

APPENDIX

SOCIAL-ECONOMIC OCCUPATIONAL RATING SCALE*

0. Professional persons:

   Actors and showmen; architects; artists, sculptors, and teachers of art; authors, editors, and reporters; chemists, assayers, and metallurgists; clergymen; college presidents and professors; dentists; designers, draftsmen, and inventors; lawyers, judges and justices; musicians and teachers of music; osteopaths; photographers; physicians and surgeons; teachers; technical engineers; trained nurses; veterinary surgeons; other professional pursuits; chiropractors; healers (not elsewhere classified); religious workers.

1. Farmers (owners and tenants of large scale operations).

2. Proprietors, managers, and officials (except farmers):

   Foresters, forest rangers, and timber cruisers; owners and managers of log and timber camps; operators, managers, and officials --extraction of minerals; builders and building contractors; manufacturers; managers and officials--manufacturing; captains, masters, mates, and pilots; garage owners, managers, and officials; owners and managers--truck, transfer, and cab companies; conductors--steam railroad; officials and superintendents--steam and street railroads; postmasters; proprietors, managers and officials[1]--transportation; bankers, brokers, and money lenders; managers or officials--insurance companies; proprietors, managers, and officials[1]--trade; managers and officials--real estate companies; retail dealers; wholesale dealers, importers, and exporters; undertakers; officials and inspectors--city and county; officials and inspectors--State and United States; billiard room, dance hall, etc., keepers; directors, managers, and officials--motion-picture production; keepers of charitable and penal institutions; keepers of pleasure resorts, race tracks, etc.; radio announcers, directors, managers, etc.; theatrical owners, managers, and officials; owners and proprietors--cleaning, dyeing, and pressing shops; managers and officials--cleaning, dyeing, and pressing shops; hotel keepers and managers; laundry owners, managers, and officials; restaurant, cafe, and lunchroom keepers.

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* Taken from "School Quality Workbook," N.Y. State Department of Education, which in turn relied on Alba M. Edwards, Alphabetical Index of Occupations, by Industries and Socio-Economic Groups. Washington (U.S. Department of Commerce): Govt. Print., 1937.

[1] Not otherwise specified.

3. Clerks and kindred workers:

Inspectors, scalers, and surveyors--log and timber camps; baggagemen and freight agents--railroad; ticket and station agents --railroad; agents--express companies; express messengers and railway mail clerks; mail carriers; radio operators; telegraph messengers; telegraph operators; telephone operators; advertising agents; clerks in stores; commercial travelers; decorators, drapers, and window dressers; inspectors, gaugers, and samplers--trade; insurance agents; newsboys; real estate agents; salesmen and saleswomen; abstracters, notaries, and justices of peace; architects', designers', and draftsmen's apprentices; apprentices to other professional persons; officials of lodges, societies, etc.; technicians and laboratory assistants; dentists' assistants and attendants; librarians' assistants and attendants; physicians' and surgeons' attendants; agents, collectors, and credit men; bookkeepers, cashiers, and accountants; clerks (except clerks in stores); messenger, errand, and office boys and girls; stenographers and typists.

4. Skilled workers and foremen:

Farm managers and foremen; foremen--log and timber camps; foremen, overseers, and inspectors--extraction of minerals; blacksmiths, forgemen, and hammermen; boilermakers; brick and stone masons and tile layers; cabinetmakers; compositors, linotypers, and typesetters; coopers; electricians; electrotypers, stereotypers, and lithographers; engineers (stationary), cranemen, hoistmen, etc.; engravers; foremen and overseers--manufacturing; puddlers; glass blowers; jewelers, watchmakers, goldsmiths, and silversmiths; loom fixers; machinists, millwrights, and toolmakers; mechanics[1]; millers (grain, flour, feed, etc.); molders, founders, and casters (metal); painters, glaziers, and varnishers (building); paper hangers; pattern and model makers; piano and organ tuners; plasterers and cement finishers; plumbers and gas and steam fitters; pressmen and plate printers (printing); rollers and roll hands (metal); roofers and slaters; sawyers; shoemakers and cobblers (not in factory); skilled occupations (not elsewhere classified); stonecutters; structural iron workers (building); tailors and tailoresses; tinsmiths and coppersmiths; upholsterers; bus conductors; conductors--street railroad; foremen and overseers--steam and street railroads.

Locomotive engineers; locomotive firemen; aviators; foremen and overseers[1]--transportation; inspectors--transportation; floorwalkers, foremen, and overseers--trade.

Firemen, fire department; marshals, sheriffs, detectives, etc.; policemen; foremen and overseers--cleaning, dyeing, and pressing shops; foremen and overseers--laundries.

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[1] Not otherwise specified.

5. Semiskilled workers:

Apprentices to building and hand trades; apprentices (except to building and hand trades)--manufacturing; bakers; dressmakers and seamstresses (not in factory); dyers; filers, grinders, buffers, and polishers (metal); milliners and millinery dealers; oilers of machinery; enamelers, lacquerers, and japanners; painters, glaziers, and varnishers (factory); operatives[1]--manufacturing; boatmen, canal men, and lock keepers; sailors and deck hands; chauffeurs and truck and tractor drivers; boiler washers and engine hostlers; brakemen--steam railroad; motormen--steam and street railroads; switchmen, flagmen and yardmen--steam and street railroads; telegraph and telephone linemen; apprentices--transportation; other occupations --transportation; apprentices--wholesale and retail trade; delivery men--bakeries and stores; other pursuits in trade; guards, watchmen, and doorkeepers; soldiers, sailors, and marines, other public pursuits; other occupations--professional service; attendants--pool rooms, bowling alleys, golf clubs, etc.; helpers--motion picture production; theater ushers; other attendants and helpers--professional service; barbers, hairdressers, and manicurists; boarding and lodging house keepers; other operatives--cleaning, dyeing, and pressing shops; housekeepers and stewards; deliverymen--laundries; other operatives--laundries; midwives and nurses (not trained); other pursuits--domestic and personal service.

6. Farm laborers.

7. Other laborers:

Fishermen and oystermen; teamsters and haulers--log and timber camps; other lumbermen, raftsmen, and woodchoppers; coal mine operatives; other operatives in extraction of minerals; firemen (except locomotive and fire department), furnace men, smelter men, and pourers; heaters (metal; laborers[1]--manufacturing; longshoremen and stevedores; draymen, teamsters, and carriage drivers; garage laborers; hostlers and stable hands; laborers--truck, transfer, and cab companies; laborers--road and street; laborers, including construction laborers--steam and street railroads; laborers[1]--transportation; laborers, porters, and helpers in stores; laborers--public service; laborers--professional service; laborers--recreation and amusement; stage hands and circus helpers; laborers--cleaning, dyeing, and pressing shops; laborers--domestic and personal service; laborers--laundries.

8. Servant classes:

Bootblacks; charwomen and cleaners; elevator tenders; janitors and sextons; launderers and laundresses (not in laundry), porters (except in stores), servants; waiters.

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[1] Not otherwise specified.

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