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ABSTRACT

A Performance Indicators in Education program has been developed in New York to serve both local and State needs. The performance of a school or school district may be defined as the difference between its actual output and its expected output. To obtain an equation for computing expected output, the academic status of students and a number of nonschool variables are analyzed. By entering a particular district's data on the variables used in the equation, an expected score is computed. If a district's actual score is higher than its expected score, the district is doing better than expected with the students it has and the conditions under which it operates. If a district's actual score is lower than its expected score, it is doing less well than expected. Using this rationale, performance scores for reading and arithmetic at the elementary school level were computed for 630 school districts in New York State. The results, along with various kinds of descriptive data, are reported on a set of tables showing the district's percentile rank on each variable and the relation between actual and expected scores on eight output measures. (Author/DJ)

MEASURING THE PERFORMANCE OF SCHOOL DISTRICTS

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The performance of a school or school district may be defined as the difference between its actual output and its expected output. To obtain an equation for computing expected output, the academic status of students and a number of nonschool variables are analyzed. By entering a particular district's data on the variables used in the equation, an expected score is computed. If a district's actual score is higher than its expected score, the district is doing better than expected with the students it has and the conditions under which it operates. If a district's actual score is lower than its expected score, it is doing less well than expected.

Using this rationale, performance scores for reading and arithmetic at the elementary school level were computed for 630 school districts in New York State. The results, along with various kinds of descriptive data, are reported on a set of tables showing the district's percentile rank on each variable and the relation between actual and expected scores on eight output measures.

MEASURING THE PERFORMANCE OF SCHOOL DISTRICTS

Information about the performance of an educational system is essential if the system is to be managed efficiently. To provide this kind of information for the public schools of New York State, the State Education Department has begun producing performance information through its Performance Indicators in Education (PIE) program.

A Definition of Performance

The performance of a school or school district may be defined in terms of the difference between (a) its actual output and (b) its expected output as determined by analysis of input and environmental factors. A high-performing school, by this definition, would be one which increases the achievement of its students beyond the level that would be expected after accounting for initial pupil achievement and external factors such as social and economic conditions.

Procedures for Computing Performance

The data used to compute performance are drawn from the Department's regular data files. Three broad categories of data were defined: 1) pupil data, which consist of scores obtained on standardized tests administered annually in all public schools to students in grades 1, 3, and 6;* 2) measures of school factors, including such variables as instructional expenditures; 3) measures of nonschool conditions, such as property value in the district and population density.

*Scores were obtained with the Pupil Evaluation Program (PEP) tests. The PEP test scores were used since these tests are administered statewide.

These sets of data are used to develop a statistical procedure for computing school district performance, as it was defined earlier. To obtain an estimate of what a district can reasonably be expected to do on a particular measure of student learning (reading achievement at the third-grade level, for example), a measure of the academic status of students at some prior time (first-grade readiness scores) and a set of measures of nonschool conditions are analyzed. The result is an equation which makes it possible to calculate for each school district an expected third-grade reading achievement score.

The expected score for a district represents a reasonable level of attainment, given the conditions under which the district operates and the achievement level of its students at an earlier time. By comparing the district's <u>actual</u> average third-grade reading achievement score with its <u>expected</u> score, we obtain an indication of the district's effectiveness in promoting reading achievement. If all relevant factors were used to calculate the expected scores, we would expect the expected score and the actual score to be the same. But school-controllable variables are purposely omitted from the equation. Thus, a discrepancy between the expected score and the actual scores is most likely the result of the school's influence: If a district's actual score is higher than its predicted score, the district is doing better than expected with the students it has and the conditions under which it operates. If a district's actual score is lower than its predicted score, it is doing less well than could be expected. If actual and predicted scores are about the same, the district is doing what is expected. This does not indicate that the district is doing an excellent job, only that it is doing a rather average job.

We know, of course, that differences between the actual and predicted scores for a district may result also from errors of measurement and from inadequate data. How, then, can we determine whether a district's actual score is really different from its predicted score? This problem is dealt with by computing a range around the expected score outside of which we have reasonable (one in three) confidence that the actual-expected difference is not the result of chance.

One of the significant features of this manner of measuring performance is that it does not require that districts be compared directly. Instead, each district is compared to its own unique standard which was derived from its own unique characteristics.

Applying the Procedures

Using the procedure described above, an equation was developed for each of eight measures of achievement: reading and arithmetic in grades three and six and gains in reading and arithmetic between grades one and three and between grades three and six. About 630 school districts were included; the five larges cities were omitted, as were districts for which there were incomplete data.

After the equations were developed, performance scores were generated for each district by inserting data from the district into an equation, working the equation to find the expected score, and computing the difference between the expected score and the district's actual score on that measure. The results are reported to the district in tables similar to that shown on the last page of this report.

Reading and Interpreting the Tables

Several items of information can be derived from the tables. First, the actual "score" for the district on any variable shown in the table is noted by an arrow. Second, the relationship between the score for the district and the scores on the same variable for other districts in the state may be found by looking across to the percentile scale in the column on the extreme left. For example, if a value for the district is opposite the 60th percentile point on the left, you can infer that about 60 percent of the districts in the state had lower scores and about forty percent had higher scores on that variable. Third, it is possible to determine the range of scores on certain variables--for example, third and sixth grade reading and arithmetic--that could be expected for the district based on information about certain handicapping or facilitating conditions faced by the district. Horizontal lines mark the top and bottom of the range. As indicated earlier, if an actual score falls outside this range, we can say with reasonable confidence that the actual score is probably really different from the expected score and therefore the result of school factors.

To illustrate, look at the table for Easter Road (a fictitious name but a real school district). The arrows in columns 13 and 15 show that the Easter Road School District students score on the average near the bottom of the distribution of districts across the state in reading in both the third and sixth grades. The arrows fall outside the horizontal lines showing, in addition, that in reading Easter Road is not producing the achievement that could reasonably be expected of it. In sixth-grade arithmetic, on the other hand, although the students are performing at a low level, low achievement is not unexpected in light of the initial level of the students and the

conditions under which the district operates. This does not relieve the district of the repsonsibility to bring its students to a higher level of achievement, but it can provide a clearer picture of the dimensions of the task and indicate a starting point in the search for remedies.

Uses of the System

The PIE system serves both local and state needs. The system provides local education agencies (LEA's) with data about the effectiveness of certain of their programs--such as elementary school reading and arithmetic--in relation to the resources and conditions of the district. The system provides the State Education Department with a relatively objective means of identifying high- and low-performing programs, schools, or districts.

At both the State and local levels, objective information about the performance of educational systems can be used in identifying educational needs, determining the most appropriate means of meeting the needs, and evaluating the results obtained.

What Such a System Would Mean for Education

A comprehensive evaluation system does not guarantee that creative and imaginative decisions will be made, but it can reduce the element of chance in decision making. Better information about system performance should help educators make education more cost-effective. It should help to promote the confidence of educators in themselves as they gain the ability to predict the consequences of their actions. It should help build public confidence in educational management as it becomes apparent that decisions are based on systematic analyses of needs and resources.

PERFORMANCE INDICATORS IN EDUCATION PROFILE

System name: Easter Road Code number: 70 13 01

	Percentile Rank	Expenditures (per pupil) 9 Tchg. & Inst. Supervision	10 Other Services	Pupil Inputs (Gr. 1 Series) 11 Mean Readiness	12 S.D. Readiness	Mean Achievement Levels 13 Reading Gr. 3	14 Arithmetic Gr. 3	15 Reading Gr. 6	16 Arithmetic Gr. 6
PERCENTILE DISTRIBUTION	Above 95	855	77.38	71.45	16.56	39.69	38.90	48.12	38.91
	90	772	68.86	69.94	15.97	39.16	38.63	46.50	38.05
	85	733	66.72	68.30	15.62	38.17	37.49	46.30	36.82
	80	706	62.48	67.86	15.46	37.64	37.14	45.90	36.56
	75	690	59.83	67.45	15.28	36.91	36.80	45.31	36.05
	70	677	58.69	67.23	15.13	36.41	36.09	44.85	35.85
	65	664	57.40	66.40	14.85	35.84	35.75	44.65	35.02
	60	647	54.59	66.26	14.76	34.89	35.36	44.26	34.17
	55	639	53.06	66.17	14.45	34.04	35.05	43.68	34.60
	50	630	51.72	66.03	14.38	33.81	33.71	43.45	34.43
	45	621	50.10	65.82	14.16	33.47	33.52	43.07	34.16
	40	619	48.00	65.60	14.02	33.27	32.92	42.83	33.50
	35	610	46.05	65.21	13.80	32.08	32.15	42.44	32.82
	30	609	44.15	64.54	13.72	31.56	31.30	41.71	32.51
	25	595	42.81	64.00	13.45	31.28	31.22	40.57	32.30
	20	585	39.90	62.14	13.21	30.88	30.66	40.28	31.82
	15	566	33.05	61.58	13.09	30.40	29.96	40.14	31.54
	10	561	28.93	58.47	12.84	29.95	28.45	39.04	29.92
	5	553	25.00	56.05	12.35	29.42	26.84	35.10	28.06
	Below								
	Mean	657	51.93	65.37	14.49	34.27	33.91	43.09	34.13
	S.D.	95	17.50	4.15	1.44	3.38	3.64	3.51	3.33

9. 1968-69 data.
10. 1968-69 data.
11. Average of 1966-67 and 1967-68 Pupil Evaluation data.
12. Average of 1966-67 and 1967-68 Pupil Evaluation data.
13. 1970-71 PEP data.
14. 1970-71 PEP data.
15. 1970-71 PEP data.
16. 1970-71 PEP data.