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GOOD SCHOOLS AND POOR SCHOOLS: HOW THEY DIFFER

Donald P. Warwick and Fernando Reimers
Harvard Institute for International Development

In Pakistan's primary schools what are the main differences between those with high and low scores on student achievement? A random (probability) sample survey of primary schools in Pakistan provides information to answer that question.[1]

In late 1988 and early 1989 interviewers went to nearly 500 schools in Islamabad and the country's four provinces. There they interviewed the headmaster, headmistress, or other school head and teachers in classes (grades) 4 and 5; gave achievement tests in mathematics and science and a short questionnaire to students in those grades; and gave their own ratings on conditions in the school, such as the number of rooms it had and how crowded it was. The achievement test, which had been developed by the World Bank and the Primary and Non-formal Education Wing of the federal Ministry of Education, drew on items based on the official curriculum for classes 4 and 5 in mathematics and science. One result was independent information on the same topics from four sources: the school head, the teachers, the students, and ratings by the interviewers.

This paper reports the main differences between primary schools scoring in the top third of a pooled index of achievement (good schools) and those in the bottom third (poor schools). The index of achievement summed four achievement scores for each school: the mean scores in mathematics and science for classes 4 and 5.[2] The analysis focuses on the top and bottom third of schools to highlight the main sources of differences in student achievement.[3] For the samples of school heads, teachers, students, and interviewer ratings the variables were combined into overlapping clusters. Examples include school characteristics, the size and density of the school, the facilities available, and the personal background and activities in school of the school heads and teachers.

Which conditions have the greatest power in differentiating good from poor schools? The most clear, consistent, and repeated findings center on the size and density of the school. Good schools have more students, more teachers, a higher student-teacher ratio, and are more likely to be rated as crowded. Good schools and poor schools also vary in their gender and location, the personal backgrounds of teachers and school heads, classroom practices as reported by teachers and by students, the activities of the school head, the rates of completing grade 5, and other conditions.

STUDENT BACKGROUND

Whatever their size, density, teaching practices or facilities, all primary schools begin with children from

different social backgrounds. Students are male or female, from homes where parents are or are not literate, where they do or do not have breakfast before they go to school, and with other differences in social class. The first question for this analysis is whether the background of students makes any difference for how they achieve in mathematics and science.

A questionnaire given to all Class 4 and 5 students asked students 33 questions about themselves, their parents, their teachers, their homes, and their schools. To help them understand the items and where to record the answers interviewers read each question aloud and helped pupils who had any problems filling out the forms.

The total sample of good schools and the sample of good schools in rural areas had significantly more male than female students. In urban schools the percentage of male and female students in good schools was similar: 53 percent male and 47 percent female. But in rural schools the gender gap was extraordinary. Of those in good schools 88 percent were male and only 12 percent female. This finding is consistent with data to be reported later on comparable differences by the gender of the school. The results suggest that conditions in the countryside may create conditions in the home and in the school that work against the academic achievement of girls.

The questionnaire collected information on the number of children in the student's family. Some researchers have suggested that a large family size creates conditions, such as pressures to have children earn more money to support the family, that work against learning in school.[4] The data on good schools and poor schools give only slight support to this hypothesis. Those sets of schools show no differences at all for the total sample of students. Those in good schools have an average (mean) of 2.3 siblings, as do those in poor schools. The same lack of differences was seen in the samples for urban and rural areas. When the data on siblings was subdivided for the number of brothers and sisters, the same pattern remained for both in the total sample, for sisters in urban and rural areas, and for brothers in rural areas. The exception was for the number of brothers in urban schools, where the figure was significantly higher for poor than for good schools.

The study also explored the relationship between student achievement and three indicators of socio-economic status: whether the student had breakfast on the morning of the survey; the literacy of the pupil's parents and the type of possessions found in his or her home, such as running water, a refrigerator, a radio, or a television set. In all three cases the relationship with achievement was mixed.

In the total sample significantly more students in good

schools than in poor schools reported having breakfast (64 percent to 58 percent). When the same comparisons were made in urban and rural areas these differences disappeared.

On a scale indicating the number of parents who could read and write, as reported by the student, good schools showed higher literacy in the total sample and in urban areas, while poor schools had more literate parents in rural areas. The findings on the literacy of the father alone show no differences between good and poor schools in the total sample or in urban areas, and higher literacy in poor schools in rural areas. In the total sample and in urban areas good schools had higher literacy than poor schools among the students' mothers, while the pattern was reversed in rural schools. The literacy of the mother thus seems to carry more weight in the total sample and in urban areas, while in rural areas having either or both parents literate is more common in poor than in good schools.

Another common hypothesis in the literature on schooling is that students of higher social class are better prepared to take advantage of the opportunities offered for learning in school.[5] If possessions are a proxy measure for economic well-being, we might expect students who report possessions at home to be under less pressure to use their after-school hours to earn money for the family and to have more time to study. An index of the family's total possessions, built by using factor analysis, shows that the hypothesis stands up well for the total sample and for urban areas but not for rural areas. In the full sample of good and poor schools and in the urban sample (of borderline significance) students reported more possessions than those in poor schools. But in rural areas students reporting more possessions at home more often came from poor than from good schools.

Findings on specific possessions showed the same mixed pattern. The only single possession consistently different for the total sample of good and poor schools and for the urban and rural samples was having a motorbike. In all three cases the families of students in poor schools were more likely than those in good schools to have a motorbike. Having a house of solid construction and a sewing machine were significantly more common among good schools in urban and rural areas but in the total sample there were no significant differences. Overall good and poor schools did not differ uniformly on these three indicators of socio-economic status.

A student background condition on which there were consistent differences for the total, urban, and rural samples was on this item: "When you leave school for the day, do you have any other work besides your school work?" Students from good schools in all three samples were more likely to answer that they did have other work. Those from the total sample and from rural

areas likewise reported that they worked more hours a day than students from poor schools. These findings contradict the opinion, often heard among Pakistani educators, that work after school harms academic achievement. The data suggest that having such work after school and the number of hours spent on it are both associated with higher achievement.

SCHOOL CHARACTERISTICS

Primary schools in Pakistan differ in where they are located and the gender of their students; their size and density; the buildings and facilities available; and the attendance and absences of their students and teachers.

Location and gender. Good schools are more likely to be located in urban rather than rural areas and to be male or coeducational rather than female.[6] The urban-rural difference arises in part from the strong preference of teachers to live in cities or towns rather than in the countryside. Given that preference, and government allowances making urban residence financially attractive, urban schools have a larger pool of teaching positions. Out of this pool they can choose those with better levels of general education, a condition positively related to student achievement. Partly because of this urban preference and partly because of cultural expectations for women in Pakistan, education districts have severe problems in recruiting teachers for female rural schools. Pakistan is a country in which there are strong norms against women living alone anywhere, but especially in rural areas. For their part, female teachers are afraid of rural residences, such as those constructed under a World Bank project, that give them no security against robbery or other attacks and leave them isolated from their families.[7]

Data collected from more than 11,000 Class 4 and Class 5 students support this interpretation. In the total sample and in rural areas, but not in urban areas, good schools have a significantly larger number of girls than boys. The differences for rural schools are dramatic. Of the 5008 rural students covered 88 percent of those in good schools were male and only 12 percent female. In urban schools the percentages of male and female pupils in good and poor schools were nearly identical. These results suggest that the living conditions of urban students support schooling in ways that are missing in rural areas. Living in cities may legitimize the notion that attending school is valuable in itself and of equal value for boys and girls.

Size and density. The most striking finding of this analysis is the close relationship between a school's size or density and its rating as high on student achievement. Table 1 shows indicators of size and density provided by school heads and the

TABLE 1
SIZE AND DENSITY IN PAKISTAN'S PRIMARY SCHOOLS

	Significance level		
	Total Sample	Urban	Rural
1. Enrollment			
Total number of students	.000	.002	.011
Net enrollment (less preschool)	.000	.002	.001
Number tested Math 4	.000	.004	.000
Number tested Math 5	.000	.004	.000
Number tested Science 4	.000	.004	.002
Number tested Science 5	.000	.005	.000
Number of students per room	.005	.02	.025
2. Number of teachers			
Teachers assigned to school	.000	.002	(.06)
Number of teachers teaching	.000	.002	.015
Teachers present during survey	.000	.011	.014
Number of other staff	.004	NS	NS
3. Size of building			
Number of classrooms	.000	.038	NS
Number of offices in school	NS	.041	NS
Number of other rooms	.028	NS	NS
4. Rated as crowded	.000	(.06)	.005

interviewer for the survey. The data on student enrollment show that on nearly every indicator good schools have more students than poor schools. The total number of students in the school differentiates good from poor schools in the total sample as well as in urban and rural areas. The same pattern occurs with net enrollment, the total number of students enrolled minus the preschool (kachi) children found in most schools. Further, the numbers of students who took each of the achievement tests, an indicator of enrollment on the day of the survey, are larger for good than for poor schools in all locations. The number of students per room, an indicator of crowding, is likewise higher for good than for poor schools in the total, urban, and rural samples.

A primary school in Pakistan averages 158 students per school and 47 per classroom. However, the survey found that enrollment was much higher in the lower grades than in Classes 4 and 5, the groups given the achievement tests. Many of these classes had between 5 and 10 students. In discussions of school size and achievement, therefore, it is crucial to be specific about the unit of analysis. The size of a school may have a different impact than that of an average classroom, and the impact of the size of Class 1 may be quite different than that of Class 5.

Another indication of size is that good schools had a larger number of teaching positions assigned to them than poor schools and more teachers in service during the academic year of 1988-89. Good schools likewise had more teachers present than poor schools on the day of the survey. All but one of these differences were significant for the total sample and for urban and rural schools. The exception was the number of teachers in service at rural schools, which was of borderline significance.

The size of school buildings and the number of staff other than teachers and school heads was greater for good than for poor schools, but the findings were less consistent than with earlier indicators. Good schools had more classrooms in the total sample and in urban areas but not in rural areas. The number of offices in the school was significantly larger for good schools than for poor schools in urban areas, but not for the total sample or rural areas. This finding is to be expected, for few rural schools, which make up the majority of schools in the sample, have offices. In addition, good schools have more rooms that are not classrooms than poor schools, but only in the total sample. The reason again may be that rural schools have few such rooms.

Finally, as part of their observation interviewers rated each school on whether it was crowded or not. In the total sample as well as in urban and rural areas significantly more of the good than of the poor schools were rated as crowded.

Why are the size and density of a school such effective predictors of the academic achievement of its students?[8] Probably the main reason is the benefits provided for leadership and teaching by a critical mass of students in the school. As size and density increase, primary schools have more single-grade teaching, a condition associated with higher student achievement. Larger schools also have more subject specialists teaching fields such as mathematics and science rather than teachers who must cover all subjects, whatever their competence in the field.

Another benefit of size and density is that it provides the critical mass necessary for leadership by school heads. In a small school the headmaster, headmistress, or senior teacher may be so taken up with teaching that there is no leadership at all. The school head may handle administrative chores, such as sending attendance records to the district education office, but beyond that the administrative system provides no time or incentive for direct attempts to improve the teaching of others. In a large unit school heads often do not teach full time and report activities such as supervising teachers and students. While such supervision falls short of an activist definition of leadership, it does suggest some attention by school heads to the performance of their fellow teachers.

Size and density thus affect achievement by creating a school environment which allows and encourages better teaching. With fewer demands from multi-grade instruction, a duty that can wear out even the best of teachers, better chances to work with a single group of students, more specialists in key areas of the curriculum, and greater supervision by school leads, the larger unit, urban and rural, is better prepared than a small school to provide effective teaching and better student learning.

Buildings and Facilities. When asked what they most need to improve education, officials commonly mention as top priorities better buildings and more facilities. The survey for school heads contained this open question: "In your opinion, what are the most important things that the government could do to help your school provide education." Among the most frequent replies were improving buildings, providing more equipment, and helping schools to get better supplies of water. Interviews with federal and provincial education officials also revealed a high concern with buildings and facilities.

Two points stand out about the survey findings on the physical condition of schools. First, without doubt the concerns of teachers, school heads and other education officials about poor facilities are justified. About 15 percent of the schools covered had no building in which classes could be held or structures in such poor condition that they were schools in name only. One school in rural Balochistan had a name and a location, but the buildings were so run down that the teacher had to move

his blackboard outdoors and hold classes with students sitting on the ground. Even schools with usable buildings are often dank, poorly lighted, and lack safe drinking water, toilets, electricity, and storage space.

The second point is that, however desperate they may be, buildings and most school facilities make little difference for student achievement. There may be other reasons for improving physical conditions, such as fostering a more favorable attitude toward schooling among parents, but if achievement is the criterion of schooling success those conditions have little influence.

Good schools are no more likely than poor schools to have a building in which to hold classes. In the total sample there are no differences between good and poor schools on ventilation in the school building; access to electricity; the adequacy of lighting; the cleanliness of the school; whether there are chairs and desks for students and teachers; the school has a toilet and, if so, whether it is clean and protected from public view; there are mats available for students to sit on the floor or on the ground outdoors; the school has a storage cabinet (almarah) or a telephone; it has a supply of charts or posters; and the water in the school is safe to drink. In the same sample good schools are more likely than poor schools to have piped drinking water and their own tanks to hold water. They are less likely to have blackboards in all or most rooms. In rural areas good schools have fewer blackboards and toilets and more piped water. In urban areas good schools have more chairs for teachers and more charts and posters than poor schools.

The most evident conclusion is that good and poor schools are similar in their buildings and facilities. Among the 60 areas in which comparisons were made good schools differed from poor schools in only 7. Those who hope to improve student learning by adding items such as desks, chairs, electricity, and toilets receive little support from these findings.

Attendance and absences. If theories of schooling are correct, good schools should have fewer absences by teachers and students than poor schools. For learning to take place teachers must be present to conduct classes and students present to master the material covered.

The survey asked teachers to report the number of days they had been absent for illness, to collect their pay, for training, because of failures in transportation, for personal business, and for other reasons. It also asked school heads to note the number of teachers absent on the day of the survey and the average number of teachers absent per month.

Good schools usually had fewer teacher absences than poor

schools. With the percentage of teachers absent on the day of the survey good schools had significantly lower rates than poor schools in the total sample and in rural areas and a lower rate of borderline significance in urban areas. On the average number of absences per month good schools again had significantly fewer absences than poor schools in the urban and rural samples. Good schools also had fewer absences in the total sample, but the difference was not statistically significant. In most of the comparisons involving specific reasons for being absent, such as illness and transportation problems, good schools and poor schools were alike. No differences were found in the total, urban, and rural samples for absences to collect pay, for training, and for transportation. In the total and the rural samples good schools had fewer health absences than poor schools. The same pattern appeared with "other absences" in rural schools. In the case of personal absences rates were higher for good than for poor schools in the total and the rural samples. Hence on findings dealing specifically with the frequency of teacher absences, as distinct from the reasons for being absent, good schools had lower rates than poor schools.

On two summary indicators of student absences, the percent absent on the day of the survey and the average percentage absent from school, good schools showed lower rates than poor schools in the total sample. The differences on the first indicator were not significant for the urban and rural samples, and on the second were significant only for the urban sample. Taken together the results on teacher and student absences broadly confirm the notion that good schools have fewer absences than poor schools. However, absences are a less powerful source of differences between those schools than, for example, size and density.

THE TEACHER

Within the school the teacher is the single most important person encouraging student achievement. It is the teacher who decides whether and how to follow the curriculum and use the textbooks, who inspires fear, confidence, or both, who helps or ignores students with problems in following the lessons, and who creates or fails to create an atmosphere supporting learning in the classroom. Even with no desks, chairs and other equipment an inspired teacher can move pupils to learn, while with the best of facilities a harsh or lazy teacher can so demoralize students that they drop out of school.

The survey asked teachers, students, and school heads about the personal background and classroom practices of teachers. The following summary draws from these three sources of information.

Personal background. In the total sample teachers in good schools differed from those in poor schools on five aspects of their personal background: their gender, their level of

schooling, the education of their father, the type of appointment they hold, and whether they receive income from work other than teaching. Good schools have more male teachers than poor schools. This finding also holds for rural schools, where 62 percent of the teachers in good schools are male and only 23 percent female. By any standard this is a dramatic difference in the gender of the teaching staff. In urban areas the gender difference is small and not statistically significant.

Good schools are more likely than poor schools to have teachers with higher levels of formal education. These schools likewise differ in the formal education of the teacher's father and mother, but the pattern of the findings depends on the level of education considered.[9] Good schools and poor schools show no significant differences on the level of the teacher's certification to teach and the literacy of the teacher's father and mother. Nor do they differ in the final grade attained by the teachers in their formal schooling and certification and the number of in-service courses completed by the teacher. Teachers in poor urban schools, but not in the total or rural sample, are more likely to have had experience in practice teaching. Good and poor schools show no differences in the length of practice teaching.

In the total and rural samples good schools are more likely than poor schools to have teachers who are married and living with their spouse or parents. These categories of schools show no consistent differences in the age, government grade, or teaching experience of teachers nor in the number of years they have been posted at the school.

To assess the socio-economic status of teachers the survey asked them if they had the following possessions in their homes: electricity, a refrigerator, a radio, gas, a sewing machine, piped water, a washing machine, a motorbike, and a television set. A related question asked about whether their homes were of higher quality (kaccha) or of lower quality (pacca) construction. Good and poor schools, particularly in urban areas, showed few differences on these possessions. Teachers from good schools in the total sample but not in the urban and rural samples were more likely than those in poor schools to have electricity. Teachers in good schools in the total and the rural sample also had better chances of having a home of solid construction. At the same time teachers from poor rural schools had significantly higher figures for refrigerators, gas, and motorbikes. As a composite measure possessions did little to differentiate teachers in good schools from those in poor schools. For the total sample significant differences appeared for only two of the ten possibilities, in urban areas there were no differences, and in rural areas the direction of the five significant differences was neither consistent nor easy to interpret.

Classroom practices. Teachers in good schools carry out their classes in different ways than those in poor schools. They spend more time with each class, cover the required materials more completely, have students with greater access to textbooks, and use student translators to make their presentations accessible to pupils who do not understand their language.

A vital question about teaching is the amount of time teachers spend with students. Educational theorists often argue that student learning will rise with the time teachers spend with their pupils. By this criterion multi-grade teaching should work against student achievement. The survey data show that among the 554 teachers covered 295 or 53 percent taught more than one class. For the total, the urban, and the rural sample such teaching occurred more often in the poor than the good schools.

A negative indicator of time with students is the frequency with which use teachers use student monitors to lead recitations and supervise classes. A common task for monitors, particularly in multi-grade classes, to guide groups in choral recitation of material from the textbooks. This practice derives from an educational tradition that puts heavy emphasis on rote memorization. The researchers found that the answers suggested during recitations were sometimes right and sometimes wrong.

In the total sample 68 percent of the teachers used monitors for these purposes. Poor schools in the total and the rural saamples showed a higher number of hours for using monitors. In the total, urban, and rural samples students in good schools more often reported that they spent more time with the teacher than with the monitor. These findings support the notion that student achievement will be higher when teachers spend more time with their students.

Student learning should also increase when teachers work with them to cover the subject matter in the curriculum. This means spending class time on material in the curriculum, giving class exercises and homework, grading the homework, giving tests, grading the homework, and discussing both homework and tests with students. The findings in Table 2 generally support the idea that curricular coverage and student achievement are related.

For the total sample, according to the reports of teachers, the chances are higher that good schools rather than poor schools will have more periods per week, more minutes per week, and more exercises in mathematics; more science but not more mathematics homework per day; and teachers who grade their homework and have frequent discussions of homework as well as longer discussions of tests with students. In most cases the differences between good and poor schools are found in the rural but not the urban sample. The same data for the total sample show no differences between good and poor schools in the periods per week and the minutes per

TABLE 2

CLASSROOM PRACTICES IN GOOD AND POOR PRIMARY SCHOOLS[1]

	Significance level		
	Total Sample	Urban	Rural
1. Findings from teachers			
Multi-grade teaching	.000	.042	.024
Hours of student monitors	.002	NS	.016
Periods per week in mathematics	.003	NS	.007
Minutes per week in mathematics	.0006	NS	NS
Number of text exercises in math	.049	NS	NS
Periods per week in science	NS	NS	NS
Minutes per week in science	NS	.000[2]	NS
Mathematics homework each day	NS	NS	(.07)
Science homework each day	.028	NS	.042
Teachers read homework	NS	NS	NS
Teachers return homework to class	NS	NS	NS
Teachers grade homework	.004	.007	NS
Teachers give tests	NS	NS	NS
Discuss tests with students	NS	NS	NS
Length of discussion about tests	.018	NS	.007
2. Findings from student survey			
Time with teacher vs. monitor	.000	.032	.000
Days a week of homework	.000	.000	.000
Exercises in mathematics	.000	.000	.000
Exercises in science	.000	.001	.000
Teacher comments on homework	.000	.000	.000
Have textbooks for all subjects	.000	NS	.000
Teachers use physical punishment	.001	.01	.000

1. The direction of the differences between good and poor schools is summarized in the text.

2. Teachers at poor schools in urban areas reported a significantly larger number of minutes in science than those at good urban schools.

week in science; whether mathematics homework and homework other than science is assigned each school day; whether the teacher reads the homework given, returns it to students, gives tests, and discusses these tests with students.

The reports of students give solid support to the importance of curricular coverage for learning. As seen in Table 2, teachers in good schools are much more likely than those in poor schools to assign homework every day, give students more exercises in mathematics and science, and comment on the student's homework each day. The differences between good and poor schools on all of these items are statistically significant for the total, urban, and rural samples.

Textbooks are the most critical resource for covering the curriculum. Particularly in an educational system stressing rote memory, these books must be available to students. The findings in Table 2 show that good schools in the total and rural samples have more textbooks available at the beginning of the year than do poor schools. This finding applies to the five subject areas in which textbooks are required: mathematics, science, Urdu, Islamyat, and social science. The same finding appears in urban areas for mathematics and Urdu texts. The results on the availability of textbooks at the time of the survey, when most students had already received their books, were in the same direction but less consistent. More teachers from good than poor schools in the total and rural samples mentioned that their students had texts in science and Urdu. Students from good schools in the total and rural samples reported more often than those in poor schools that they had textbooks for all their subjects. These findings strongly support the position that achievement rises, particularly in rural areas, when students have the textbooks necessary to do the work required by the curriculum.

The teaching kit is an instructional aid that received strong backing from the government in the 1970s and is still found in schools.[10] It is a box of over 100 items such as test tubes, beakers, posters, and charts. Table 2 shows that good and poor schools in the total and rural samples differ mainly on whether the teacher has ever used the kit. Good schools have higher percentages of teachers who have used the kit. Good rural schools are also more likely than poor rural schools to have kits with all their parts. These sets of schools do not differ on whether teachers were trained to use the kit, the length of such training, the number of lessons for which it has been used, and whether the teachers found any problems in using these materials. In comparison with the items already mentioned, the teaching kit contributes little to differentiating good from poor schools.

One teaching practice that is controversial in world educational circles but less so in Pakistan is the use of

physical punishment. In primary schools teachers often keep sticks in their classrooms and use them to punish children. Do good and poor schools differ in this practice? The findings are inconsistent. Reports from the teachers about their own use of physical punishment show differences only for urban schools. There poor schools have more teachers using such punishment than good schools. In contrast, students from good schools in the total, urban, and rural samples report being hit by the teacher more often than students in poor schools.

It is hard to interpret these results. If the replies from the students are true, and there is little reason to doubt their accuracy, the findings might seem to confirm the English proverb "Spare the rod and spoil the child." But even if having the teacher hit the child does help to raise achievement scores, one would still want to know how beatings affect the student's long-term attitude toward learning and schooling. It is entirely possible that pupils learn more in a tightly structured classroom where physical punishment is common but drop out of school at an early age because they are terrified of their teachers. Also, the reports of the students are not supported by the findings from the teachers, many of whom do not hesitate to say that they use a stick in the classroom.

ADMINISTRATION AND SUPERVISION

Recent educational theory in the United States highlights the for leadership by principals and others responsible for managing schools.[11] Though attempts are being made to change the system, in Pakistan's primary schools the word leadership is rarely heard and the behavior it suggests is rarely seen. Instead education districts emphasize the traditional concepts of administration and supervision. While leadership suggests dynamic efforts to mobilize teachers and students to go beyond what is stated in the rules, administration and supervision stress correctness in the handling of required forms, good order and discipline in the classroom, and conformity to generally accepted concepts of how teaching should take place. The introduction of Learning Coordinators represents one effort to use external supervision to improve teaching, but to date its results do not show that it has led to better leadership.[12]

The person responsible for administration and supervision in a school is the headmaster, headmistress, senior teacher, or other designated teacher. The survey findings show that the traditional tasks of supervision, such as monitoring the performance of teachers in the school, are related to student achievement. In the total and urban samples good schools had school heads who spent more hours supervising teachers than poor schools. The same difference appeared in rural schools, where opportunities for supervision are usually less than in urban areas, but it was only of borderline significance. Good schools

in the total sample also had more heads than poor schools who observed teachers. Further, in the total and the rural samples the heads of good schools were more likely than those in poor schools to call meetings with their fellow teachers. These examples suggest that school heads in Pakistan can make a difference for student achievement.

External supervision of the schools is the responsibility of the District Education Officer, the Sub-Divisional Educational Officer, the Assistant Education Officer, the Learning Coordinator, or officials with different titles but equivalent duties. Where there is such a position, Learning Coordinators are expected to make the most visits to the school. Their task is not only to supervise in the traditional sense, but to work actively with teachers in between 10 and 15 schools to improve the quality of teaching. Visits by the District Education Officers and other supervisors are less frequent and less consequential for teaching.

The survey included many questions about visits by Learning Coordinators and district supervisors, such as how long they observed the school, whether they made comments about the school during their visit, and whether the teachers learned new methods of teaching from these contacts. Compared to poor schools, good schools in the total and the rural samples had longer visits by Learning Coordinators and Sub-Divisional Educational Officers. In those same samples teachers from good schools were more likely than to receive comments from the Learning Coordinator and the Assistant Education Officer and to indicate that comments from the Learning Coordinator helped them to learn new methods of teaching. Teachers from poor schools in those samples more often said that visits by Learning Coordinators and supervisors were not helpful.

Supervision best distinguished good from poor schools in the rural schools and the total sample, 80 percent of which was rural. Even so, it was not one of the strongest reasons for dissimilarity between those schools. Among the 21 items there were significant differences in the total sample on 9 and in the rural sample on 12. The urban sample had significant differences for only 2 of the 21 items, the number of visits by the District Education Officer, who rarely comes to schools, and the Assistant Education Officer or Assistant Sub-Divisional Educational Officer. The good schools had less visits than poor schools by the DEO and more by the AEO or ASDEO.

SUMMARY

Schools scoring in the top third on a pooled index of student achievement differ in many ways from those in the bottom third on that index. The main differences are these.

Good schools are more likely to be in urban than rural areas. They are also more often male or coeducational than female. This difference by the sex of the school is found only in rural areas, where 89 percent of the good schools are male or coeducational and only 11 percent female.

The single greatest source of differences between good and poor schools is in their size and density. On six indicators good schools have significantly higher enrollment than poor schools. They also have more teachers as well as more classrooms and are more likely to be rated by interviewers as crowded. The research suggests that size and density affect achievement by reducing the pressures for multi-grade teaching, a demanding task that is associated with lower achievement, and encouraging school heads to supervise the quality of instruction.

Teachers in good schools have higher levels of formal education than those in poor schools and are more likely to teach one rather than several grades. Teacher certification does not differentiate good from poor schools. The classroom practices of teachers in good schools show better coverage of the curriculum, more homework, more exercises in mathematics and science, more tests, and more discussion of tests with students. Students in good schools also have better access to textbooks than those in poor schools. In addition, teachers in good schools depend less on student monitors and, particularly in rural areas, more often use student translators to make their presentations understood by pupils who do not understand the language they use in class.

Although administration and supervision are not the strongest source of differences between high- and low-performing schools, good schools are more likely to have heads who supervise teachers and call meetings with them. In those schools external supervisors, particularly Learning Coordinators, are more likely to visit than in poor schools and to help teachers learn new methods of teaching.

NOTES

1. The survey was a joint effort by Project BRIDGES of the Harvard Institute for International Development and the Academy of Educational Planning and Management in Islamabad. The research was carried out by separate teams working in Islamabad and in each province. Special thanks must go to the four provincial coordinators, Anwar Hussain, Khurshid Ahmad, Syed Fazl-Qadir, and Ghaffar Siddiqui, the assistant coordinators, and the field interviewers who visited the schools. Theirs was often an arduous task which they carried out with high standards of professionalism and in good spirits. Provincial and district officials made this research possible by granting permission for the visits to schools and providing data on enrollment and costs. During the research the

BRIDGES team, Noel McGinn, Fernando Reimers, and Donald Warwick, accompanied each provincial team during visits to schools and worked to resolve field problems as they arose.

2. To correct for differences in the means across the tests and thereby make each score count equally in the index of achievement the total mean for a given test, such as mathematics 4, was subtracted from the mean of the school on that test. These corrected school means were then summed to form the index.

3. This paper starts with low and high achieving schools and works back to the sources of that difference. For more complex analyses predicting achievement with characteristics of students, teachers and schools, including some using hierarchical linear modeling, see other papers in the BRIDGES series on primary schools in Pakistan.

4. Cf.

5. See, for example, C. Jencks et al., 1972. Inequality: A Reassessment of the Effect of Family and Schooling in America. New York, Basic Books, especially pp. 138-141.

6. The survey data show that 81 percent of the schools are rural and 19 percent urban. According to field observations 47 percent of the schools are male, 28 percent female, and 25 percent coeducational.

7. For details on the female residence project sponsored by the World Bank and the Government of Pakistan see D. Warwick, F. Reimers, and N. McGinn, 1991. "The Implementation of Educational Innovations in Pakistan: Cases and Concepts." Cambridge, Mass.: Harvard Institute For International Development, Development Discussion Paper.

8. Size and density are equally strong predictors of the percentage of students who complete primary school. For a related conceptual explanation see the interpretations offered in a companion paper on primary schooling in Pakistan: D. Warwick and F. Reimers, 1991. "Primary School Completion in Pakistan." Cambridge. Mass.: Project BRIDGES, Harvard Institute for International Development, Harvard University. The explanation that follows repeats interpretations made there.

9. Good schools have fewer parents who never attended school and more who attended or completed primary or middle school. Poor schools have more parents who completed secondary school. The differences for the teacher's father are significant for the total and the rural sample. Those for the teacher's mother are not significant for the total sample and of borderline significance in the urban and rural samples.

10. For details on this innovation see Warwick, Reimers, and McGinn, 1991, op. cit.

11. See, for example, R. S. Barth, 1990. Improving Schools from Within: Teachers, Parents, and Principals Can Make the Difference. San Francisco: Jossey-Bass; D. B. Tyack, 1982. Managers of Virtue: Public School Leadership in America, 1820-1980. New York: Basic Books; S. C. Smith and P. K. Piele (eds.), 1989. School Leadership: Handbook for Excellence. Eugene, Or.: ERIC Clearinghouse on Educational Management, College of Education, University of Oregon.

12. This innovation is discussed in Warwick, Reimers, and McGinn, op. cit.