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Educational Resources and Impediments in Rural Gansu, China

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Educational Resources and Impediments in Rural Gansu, China

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Educational Resources and Impediments in Rural Gansu, China, 2000-2004

EXECUTIVE SUMMARY

This report seeks to provide a portrait of schools serving rural communities in northwest China, and to shed light on factors that encourage and discourage school persistence among children in this region. To achieve these goals, we analyze a survey of rural children and their families, schools, and teachers in Gansu province. The project interviewed children in the year 2000, when children were 9 to 12 years old, and again four years later.

In part one of the paper, we provide a descriptive overview of the material, human, and cultural resources available in sampled primary and middle schools. Where possible, we note changes between 2000 and 2004. We describe the following types of resources: (1) basic facilities; (2) financial arrangements; (3) teachers, including their background, qualifications, working lives, professional development activities, satisfaction with work, and attitudes about school management and culture; and (4) classroom environments, as reported by teachers and by students. In this descriptive section of the paper, we highlight basic infrastructure issues, the complexity of financial arrangements at the time of the surveys, problems of teacher wage arrears and teacher morale, and the

pedagogies and learning environments in classrooms, as reported by teachers and students.

In part two of the paper, we investigate reasons for school leaving reported by village leaders, families, and children themselves, and analyze contributors to subsequent enrollment, change in attainment, and attainment of nine years of compulsory education. Our models of family, teacher, and school effects on outcomes show that higher socio-economic status children are more likely to show grade attainment, continued enrollment, and attainment of nine years of basic education. In contrast, the gender story is mixed: girls are less likely to be enrolled, but have not gained less grades, nor are they less likely to achieve nine years of education. This finding suggests that boys may start later or repeat more. It is possible that boys are more likely to be encouraged to repeat a grade to complete it successfully or to increase high school exam scores.

One significant finding is that the introduction of school and teacher effects, by and large, does not explain away the advantages of children in better-off families. School and teacher effects do not consistently matter across the three outcomes. Some interesting findings include that teacher absenteeism in 2000 is associated with less attainment between 2000 and 2004; children with better-paid home room teachers are more likely to attain nine years of school; and children in schools with *minban* teachers are less likely to attain nine years.

However, there is not a consistent story of school characteristics that help or hinder children's persistence. Reports by village-leaders, fathers, mothers, and children themselves indicate that, along with socioeconomic status, children's performance and engagement are significant factors in school continuation decisions in Gansu's rural villages. Multivariate analyses indicate that children's early aspirations and performance matter for later outcomes.

We close by discussing the most significant strengths and weaknesses identified among the school resources discussed in part one, and the most significant supports and hindrances to favorable educational outcomes considered in part two.

Educational Resources and Impediments in Rural Gansu, China

INTRODUCTION

This report analyzes a longitudinal survey of rural children and schools in Gansu province, with two main goals. First, we seek to provide an overview of the material, human, and cultural resources available in primary and middle schools serving Gansu's rural communities. Second, we seek to offer insights on factors that support and hinder favorable educational outcomes of academic achievement, engagement with education, continued enrollment, and high parental aspirations.

To achieve these goals, we analyze a survey of rural children and their families, schools, and teachers in Gansu province. The survey was implemented in the year 2000, when children were 9 to 12 years old,¹ and again four years later, in 2004. We begin with a brief background section that explains why a better understanding of schools and school experiences in China's western regions is needed, from a policy perspective, and describes the data used in this report.

¹ For the sample of 2000 children selected based on registered birthdates, 10 households reported birthdates that made their exact ages less than 9, and 12 reported birthdates that made their exact ages greater than 13. Analyses that follow use ages rounded at mid-year to the nearest full year, rather than exact ages.

We then turn to the main empirical results. In part one of the main results, we provide an overview of the material, human, and cultural resources available in sampled primary and middle schools serving Gansu's rural communities. Where possible, we note changes between 2000 and 2004. We describe the following types of resources: (1) basic facilities; (2) financial arrangements; (3) teachers, including their background, qualifications, working lives, professional development activities, satisfaction with work, and attitudes about school management and culture; and (4) classroom environments, as reported by teachers and by students.

In part two, we investigate reasons for school leaving reported by village leaders, families, and children themselves. Guided by these reports, we analyze performance and early attitudes about schooling. We then consider these factors, along with economic factors and school-level factors, as contributors to subsequent enrollment, change in attainment, and attainment of nine years of compulsory education.

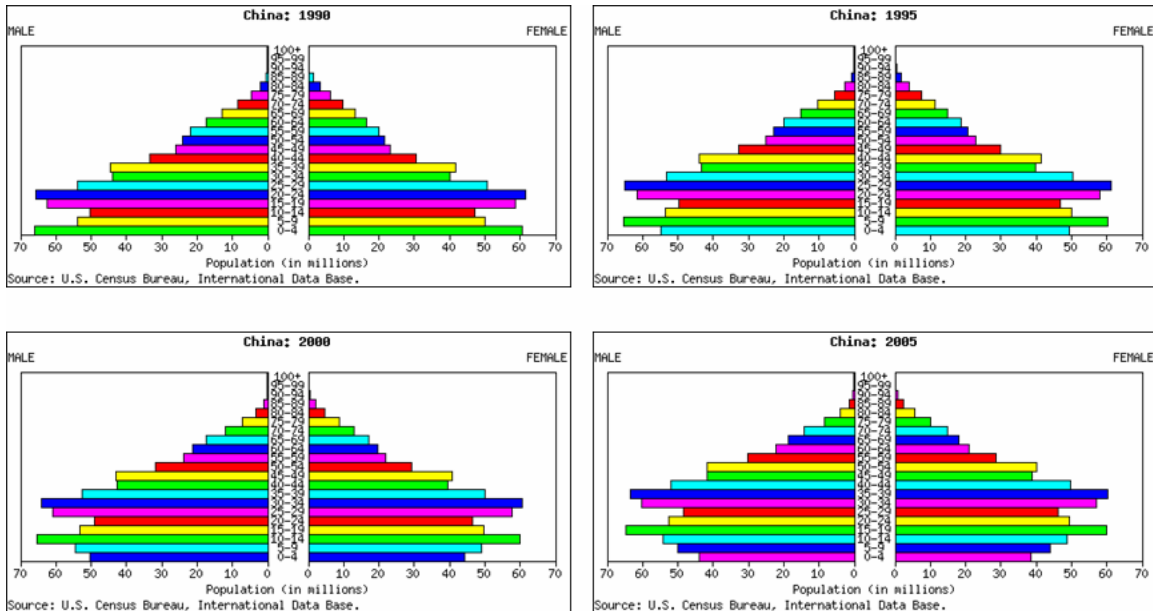
We close by discussing the most significant strengths and weaknesses identified among the school resources discussed in part one, and the most significant supports and hindrances to favorable educational outcomes considered in part two.

BACKGROUND

The educational attainment of China's population has increased dramatically in the years since the establishment of the People's Republic in 1949. For example, estimates from a sample of the 2000 census indicate that just two percent of women in their 80s had a junior high school or higher level of education; among 25 to 29 year-olds, the figure was 68 percent (Hannum, Behrman, Wang, and Liu, forthcoming: Figure 2).

The task of improving access has grown easier as school-aged cohorts have stopped expanding and begun to decline (see the population pyramids in Figure 1). The data underlying these pyramids shows, for example, that the number of 5 to 9 year-olds in 1995 was about 21 percent higher than in 1990. The 2000 number was about 18 percent lower than the 1995 number, and the 2005 number was about 9 percent lower than the 2000 number (calculated from United States Census Bureau, 2005).

Figure 1: China Population Pyramid by Year



Yet, important gaps in access persist in some areas. In particular, educational attainments in China’s northwest and southwest continue to lag behind. For example, among 25 to 34 year-olds in the 2000 census, about 8 percent of young adults in the northwest and about 7 percent in the southwest have not attended formal schooling at all; these figures compare to 2 percent or less for all other macro-regions in China (Hannum et al., forthcoming: Table 6). Rural children in the interior regions are at particularly high risk of early school leaving.

China’s government has long sought to remedy the persistent rural poverty in the west. Improving chances for social mobility via educational expansion in this region has been a key element of long-term efforts toward

poverty alleviation. Yet, while the educational disadvantage of children in the west is well-recognized, little systematic data has been collected about the educational conditions these children face. Moreover, beyond the important problem of school costs that burden poor rural families, factors that improve or reduce chances of school continuation are poorly understood. To address this dearth of information, we offer a description of the schools attended by rural children in Northwest China, and a preliminary analysis of factors—economic, performance-related, and attitude-related—that might matter for school continuation.

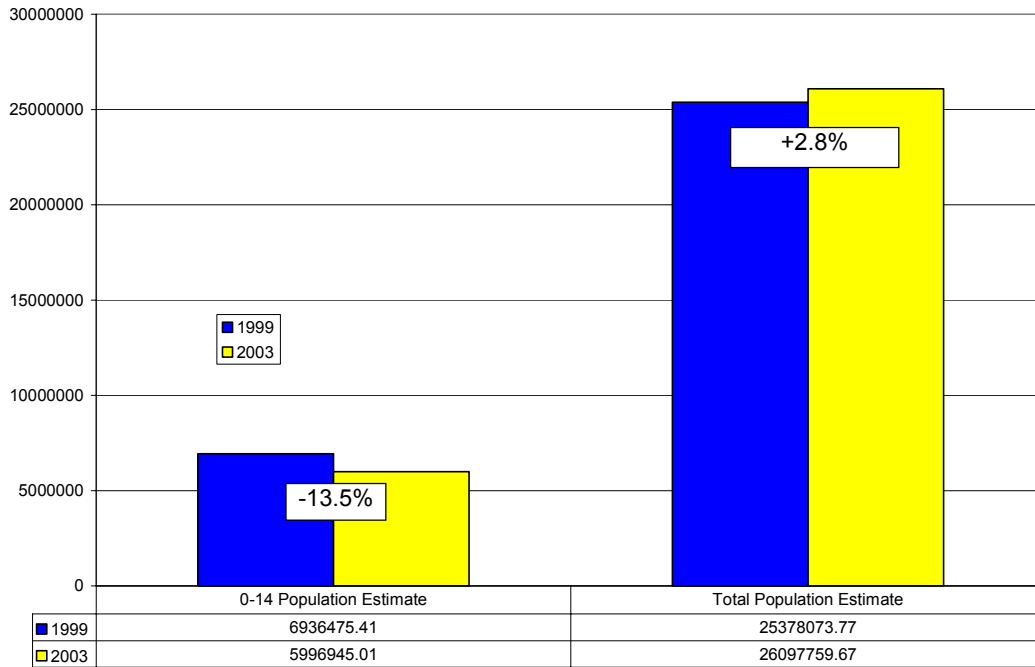
We focus on rural areas in one province in the Northwest region: Gansu. Gansu stretches across parts of the Gobi desert, mountainous and hilly areas, and vast grasslands. Gansu's per capita GDP in 2005 was 7,341 RMB (about \$891)-- just about 16 percent of that of Beijing's per capita GDP in the same year (44,969 RMB, about \$5,457) (China Internet Information Center 2005a, b). Most of Gansu's geography is mountainous or highland plateau, with an elevation of more than 1,000 meters (UNESCAP, 2005). In the year 2000, Gansu province had a population of 25.62 million, 76 percent of whom resided in rural areas (UNESCAP, 2005)². Importantly, rural residents in Gansu are among the poorest

² By 2005, the population was estimated to be 25.944 million (China Internet Information Center 2005b).

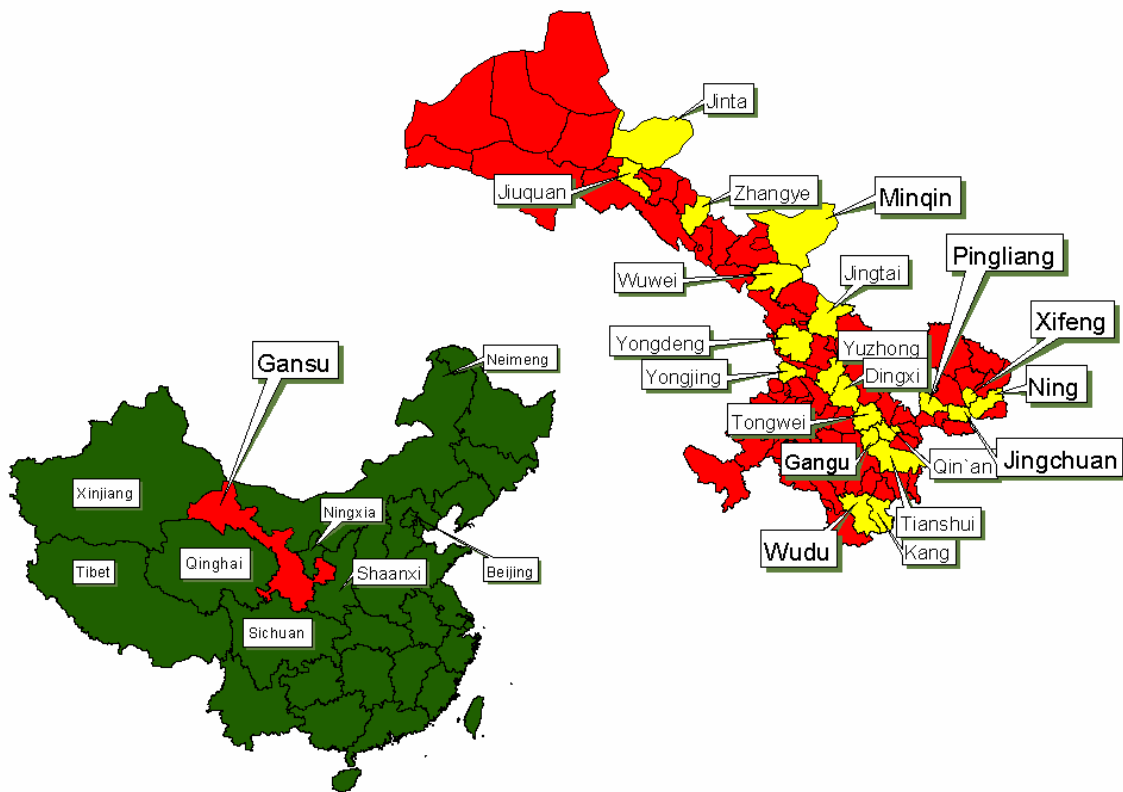
in China, with only rural residents in Guizhou having lower per capita income in recent years (National Bureau of Statistics (China) 2005a). In 2004, average rural per capita income was 60 percent of the national average, about 30 percent of that of Beijing, about one-fourth of that of Shanghai, and about the same as that of Tibet (National Bureau of Statistics (China) 2005a). According to statistics compiled by UNESCAP (2005), Gansu has the second-highest illiteracy rate in China.

Gansu is experiencing a contraction of child cohorts. Figure 2 shows that while the overall population of Gansu increased by about 2.8 percent between 1999 and 2003, the population of children ages 0 to 14 declined by about 13.5 percent in the same period.

Figure 2. Gansu Total Population and Cohorts Ages 0 to 14 by Year



Our analyses draw on a unique data set, The Gansu Survey of Children and Families (GSCF), a multi-level survey designed to increase understanding of rural children’s schooling and welfare in the context of poverty. The GSCF includes two waves of data collected from the same sample of children in 2000 and 2004.



Map 1. Gansu Province, GSCF Counties Marked

The GSCF-1 (2000) surveyed 2000 children aged 9 to 12 and their families in rural areas of 20 counties in Gansu Province. GSCF-2 re-visited the same children in 2004. Map 1 shows the distribution of the sample across counties in Gansu.

The sample was drawn using a multi-stage, clustered design with random selection procedures employed at each stage (county, township, village, child). Several minority autonomous counties were excluded from the sampling frame

due to travel restrictions to these areas, language barriers, limited transportation, and sparse and dispersed populations in these counties.³

At the final stage, children were sampled from birth records in 100 selected villages. In China, the urban-rural designation is official, clearly defined, and consequential for access to services, and so drawing a sample of rural villages was a clear-cut task. In terms of income, our sample is broadly representative of rural Gansu: the per capita incomes of 46 percent of the households in our sample (or 920 households) were above the provincial average. The remaining 54 percent of households (or 1,080 households) had per capita incomes that were below the provincial average (Gansu Statistics Bureau, 2000).

In addition to interviewing children and their parents, we collected data from all village leaders, all principals in primary schools, and all teachers in primary schools serving sample villages. In 2004, we added data from all principals and teachers in the main junior high schools serving sample villages.

³ Unfortunately, the sample does not contain sufficient numbers of minority children for meaningful analysis. With this caveat, the GSCF is representative of children in rural areas of Gansu, and includes wealthier and poorer rural counties.

Table 1. Child Samples and Percent Enrolled in 2000 and 2004

	<u>Year</u>	
	2000	2004
	At ages 9-12*	At ages 13-16
Total enumerated children (based on household reports)	n=2000	n=1918
Among which, percent enrolled	98.85	86.81
Descriptive tables on child attitudes: sample of children with valid observations on the child questionnaire in <u>both</u> 2000 and 2004	n=1776	n=1776
Among which, percent enrolled	99.72	89.58
Multivariate analyses: Sample with valid observations on 2000 child, family, and school predictors. (Variability in sample size across multivariate tables stems from different numbers of valid observations on the dependent variables).	n=1693	n=1693
Among which, percent enrolled	99.76	87.06

Source: GSCF-1 and GSCF-2.

Note: Ns for enrollment status in the 2000 household data were actually 1775 and 1692. 2000 enrollment status is not used in subsequent analyses, which are based on the Ns listed in the table.

*For the sample of 2000 children selected based on registered birthdates, 10 households reported birthdates that made their exact ages less than 9, and 12 reported birthdates that made their exact ages greater than 13. Analyses that follow use ages rounded at mid-year to the nearest full year, rather than exact ages.

Table 1 shows our sample of children. In 2000, our sample included 2000 children, among whom virtually all (98.85 percent) were enrolled in school.⁴ In 2004, we re-visited households of 1,918 of these children, among which group 1,665 or about 87 percent were still enrolled in school, according to household

⁴ This number is similar to the enrollment rate for school-aged children in Gansu reported by UNESCAP for the year 2000, at 98.83 percent. However, the UNESCAP number is almost certainly an enrollment ratio (enrollments from one source, base population from another), rather than a rate based on a survey of children. Whether it is a gross or net enrollment ratio, and the age range to which it refers, are not specified (UNESCAP, 2005).

reports. A number of these children were no longer living at home, and while we collected information from other family members about these children, we were unable to administer questionnaires to these children. For tables based on child questionnaires, we employ a sample with valid observations on all child questionnaire items in both years, totaling 1,776. For multivariate analyses, we employ a sample of children with valid observations on all predictors measured in 2000, plus valid observations on the outcome variables of interest, for a maximum sample size of 1,693 (estimation samples vary in size depending on the valid observations on outcome variables of interest). The enrollment rate among this group was also 87 percent.

Table 2. Number of Schools, Teachers, and Villages in the Sample in 2000 and 2004		
	<u>Year</u>	
	2000	2004
Primary Schools	131	140
Junior High Schools		77
Primary School Teachers	1009	1018
Junior High School Teachers		1332
Villages	100	100

Source: GSCF-1 and GSCF-2 Principal, Teacher, and Village Questionnaires.

Table 2 shows our sample of primary schools, junior high schools, primary and junior high school teachers, and villages. Our 2000 sample included 131 primary school principals and 1,009 primary school teachers. Our 2004 sample included 140 primary school principals, 1,018 primary school teachers, 77

junior high school principals, and 1,332 junior high school teachers. In both 2000 and 2004, our sample included 100 village leaders.

THE NATURE OF RURAL SCHOOLS

In this section, we describe attributes of schools, including their basic facilities, the background, working conditions, and work-related attitudes of their teachers, finance, and classroom learning environments.

Basic Facilities

Primary Schools

Table 3 shows the percent of schools with various types of infrastructure, by year and by level. Table 4 shows means for various types of school resources by year and by level. In terms of general infrastructure, primary schools had an average of 10 classrooms in 2004 (Table 4). Just over half (58 percent in 2000 and 54 percent in 2004) had common teacher workrooms (Table 3). In 2004, just 2 percent of schools lacked electricity (Table 3). About 30 percent of classrooms failed to meet safety standards in 2004 (Table 4).

Table 3. School Facilities by School Level in 2000 and 2004

	<u>Primary School</u>		<u>(t-values)</u>	<u>Junior High School</u>
	2000	2004		2004
Are there enough desks and chairs for all students?	n=131	n=140	1.51	n=77
Percent Yes	84.73	90.71		90.91
Does this school have electricity?	n=131	n=140	0.47	n=77
Percent Yes	96.95	97.86		100.00
Does this school have a library?	n=131	n=140	1.02	n=77
Percent Yes	70.99	76.43		97.40
Does this school have a science laboratory?	n=131	n=140	1.32	n=77
Percent Yes	25.19	18.57		84.42
Does this school have a teacher workroom?	n=131			
Percent Yes	58.02			
Does the school have a teacher workroom or <i>jiaoyan</i> office ⁺		n=140		n=77
Percent Yes		54.29		72.73
Does this school have computers?		n=140	N/A	n=77
Percent Yes		37.14		96.10
Does this school provide teacher housing?		n=140		n=77
Percent Yes		90.00	N/A	93.51
Does this school have boarding students?	n=131	n=140	1.20	n=77
Percent Yes	3.82	7.14		46.75

Source: GSCF-1 and GSCF-2 Principal Questionnaires.

+ Response category changed in 2004 to include *Jiaoyan* Office

H₀: $\mu_{\text{PRIMARY2000}} = \mu_{\text{PRIMARY2004}}$

*=p<.05

Table 4. School Resources by School Level in 2000 and 2004 (Means)

	<u>Primary School</u>		<u>(t-values)</u>	<u>Junior High School</u>	
	2000	2004		2004	2004
Number of teachers who live at the school	n=129 5.60	n=140 7.66	2.16*	n=77 36.03	
Number of classrooms in the school		n=140 10.04		n=77 26.55	
Percent of unsafe classrooms in the school		n=140 28.97		n=77 16.26	
Percent of classrooms that can be used in the rain		n=140 78.55		n=77 82.37	
Percent of classrooms that have a glass chalkboard		n=140 10.57		n=77 37.45	
Percent of classrooms that have a cement chalkboard		n=140 85.64		n=77 50.17	
Percent of classrooms that have a magnetic chalkboard		n=140 6.10		n=77 11.84	

Source: GSCF-1 and GSCF-2 Principal Questionnaires.

$H_0: \mu_{\text{PRIMARY2000}} = \mu_{\text{PRIMARY2004}}$

*= $p < .05$

In 2004, about 90 percent of primary schools provided teacher housing, with an average of about 8 teachers living at the school. Consistent with what might be expected given recent efforts to consolidate primary schools in sparsely populated areas, under 4 percent of primary schools reported boarding students in 2000, but 7 percent did so in 2004 (Table 3).

We next considered the kinds of infrastructure that might more directly support teaching and learning. In 2000, about 15 percent of principals reported insufficient desks and chairs for students, and by 2004, just under 10 percent did so (Table 3). However, this change might be related to declining numbers of

school-aged children, rather than to upgrades in schools. As described earlier, China's primary-aged cohort is decreasing, and the child population in Gansu is also decreasing (Figures 1 and 2).

About 85 percent of classrooms in 2004 had cement chalkboards (Table 4). In 2004, roughly 11 percent of classrooms had higher-quality glass chalkboards and roughly 6 percent of classrooms had higher-quality magnetic chalkboards. Over one-third of schools reported having computers (2004 data only). Substantial numbers of schools lacked libraries, but this percentage is going down, in our sample areas: 29 percent in 2000 and 24 percent in 2004. Few schools (25 percent in 2000 and 19 percent in 2004) had science laboratories (Table 3).

Junior High Schools

For the 77 junior high schools serving sample villages in 2004, about 9 percent reported insufficient desks and chairs for students (Table 3). All junior high schools had electricity. Virtually all had a library (97 percent) and had computers (96 percent). Most schools had a science lab (84 percent) and a common teacher workroom (73 percent). Among junior high schools, 94 percent boarded teachers, and 47 percent boarded students.

Financial Arrangements

Household Expenditures on Education

Table 5 shows average semester educational expenditures on the target child in 2000 and in 2004. All costs enumerated in 2000 totaled 157 RMB; all costs enumerated in 2004 totaled 374 RMB. Thus, as target children grew older and started junior high school, parents paid more. This interpretation of the rise in costs is consistent with the costs disaggregated by school level (in the right three columns of Table 5), which highlight the substantially higher level of junior high school fees.

Table 5. Average Semester Educational Expenditures for the Target Child in 2000 and 2004

	<u>All Children³</u>		<u>Enrolled Primary Students</u>		<u>Enrolled Junior High Students</u>
	<u>2000</u>	<u>2004</u>	<u>2000</u>	<u>2004</u>	<u>2004</u>
Tuition and Textbooks	n=2000 94.08	n=1918 208.86	n=1905 93.93	n=451 115.38	n=1127 229.55
School Supplies+	n=2000 20.37	n=1918 46.26	n=1905 20.47	n=451 29.02	n=1127 55.84
Food, Board, and Transport ⁺⁺	n=2000 10.76		n=1905 9.67		
Board and Transport ⁺⁺⁺		n=1918 21.33		n=451 2.46	n=1127 19.26
Food ⁺⁺⁺		n=1918 66.37		n=451 9.71	n=1127 68.54
Tutoring	n=2000 0.34	n=1918 n=9.49	n=1905 0.28	n=451 0.88	n=1127 12.70
Uniforms	n=2000 18.67	n=1918 6.55	n=1905 18.23	n=451 4.13	n=1127 8.95
Other Costs	n=2000 13.24	n=1918 15.17	n=1905 12.99	n=451 6.51	n=1127 18.76
All Educational Costs ¹	n=2000 157.46	n=1918 374.03	n=1905 155.57	n=451 168.08	n=1127 413.60
Comparable Educational Costs ²	n=2000 126.33	n=1918 240.07	n=1905 125.43	n=451 126.89	n=1127 269.96

Source: GSCF-1 and GSCF-2 Household Questionnaires.

⁺ The wording in 2004 included a dictionary and *fudao* materials, which were not included in 2000.

⁺⁺ Answer option wording in 2000.

⁺⁺⁺ Answer option wording in 2004

¹ Total educational costs are computed as a sum of all enumerated cost items in each year (tuition and textbooks, school supplies, food, room, and board, tutoring, uniforms, and other costs).

² Comparable educational costs is calculated as a sum of cost items enumerated in both years (tuition and textbooks, tutoring, uniforms, and other costs).

³ All children reported in household regardless of enrollment status.

Table 6. Total Educational Expenditures for Households in 2000 and 2004

	<u>2000</u>	<u>2004</u>
Total household educational expenditure ^{1,2}	n=2000 356.77	n=1918 910.17

Source: GSCF-1 and GSCF-2 Household Questionnaires.

¹ Total educational costs are computed as a sum of all enumerated cost items in each year (tuition and textbooks, school supplies, food, room, and board, tutoring, uniforms, and other

² All children reported in household regardless of enrollment status.

Table 6 shows more strikingly the rising burden on families as children age, given that most families have more than one child. On average, total enumerated semester costs in 2000 for sample child households were 356.77 RMB. In 2004, the total enumerated semester costs were 910 RMB. Do these per semester school costs represent a heavy burden on families? It seems likely that the answer is a resounding yes. According to available official estimates for the full year of 2004, total rural per capita net income in Gansu averaged 1,852 RMB (National Bureau of Statistics (China) 2005). In the GSCF sample in 2004 (N=1916), the corresponding figure was 1,926 RMB (calculations not shown).

Tuition and Fees Reported by Schools

We next turn to the question of the fees that school principals report that they are charging. In general, we present averages calculated in two ways: across all schools, and across schools that reported each fee type. Readers may be interested in viewing the all-school average, to see what the overall contribution of a given fee is in the fee structure of all schools, or the valid-observation average, to see what the fee average is just among those schools that charge the fee. Fees reported are per semester.

We begin by discussing mandatory fees. Between 2000 and 2004, many schools began to adopt a new “one fee system” (*yifeizhi*, 一费制), in which schools charged just one total fee. However, among schools that reported having

adopted the one fee system, reporting on fees varied. Among principals that declared that they were using the one fee system, some reported only a breakdown of fees, some reported only the one fee system amount, some reported both (with the breakdown summing to the one fee amount), and still others reported a one fee system, plus some additional fees by type. For this reason, we do not attempt to aggregate the fees, but rather present averages for each fee type by grade, as reported by principals. Table 7 shows the average across all schools and Table 8 shows the same set of numbers averaged across non-zero, non-missing cases.

Table 7. Average Semester Required School Fees by Grade in 2000 and 2004 (Average Across All Schools)

Required Fees	Primary 1		Primary 2		Primary 3		Primary 4		Primary 5		Primary 6		Junior 1	Junior 2	Junior 3
	2000	2004	2000	2004	2000	2004	2000	2004	2000	2004	2000	2004	2004	2004	2004
Tuition	n=131 13.94	n=140 24.79	n=131 13.70	n=140 26.41	n=131 14.62	n=140 27.00	n=131 12.59	n=140 27.11	n=131 12.42	n=140 26.49	n=131 3.11	n=140 22.11	n=77 32.39	n=77 32.55	n=77 32.58
Book fee	n=131 53.44	n=140 19.68	n=131 55.28	n=140 20.03	n=131 70.93	n=140 23.29	n=131 64.94	n=140 24.36	n=131 77.29	n=140 23.42	n=131 15.06	n=140 17.91	n=77 66.31	n=77 66.43	n=77 54.57
Heating fee	n=131 7.64	n=140 4.29	n=131 7.65	n=140 4.29	n=131 7.63	n=140 4.08	n=131 7.54	n=140 4.29	n=131 6.87	n=140 3.86	n=131 2.08	n=140 3.50	n=77 8.44	n=77 8.44	n=77 8.44
Class fee	n=131 1.53	n=140 0.61	n=131 1.48	n=140 0.61	n=131 0.89	n=140 0.61	n=131 1.39	n=140 0.61	n=131 1.80	n=140 0.66	n=131 0.34	n=140 0.64	n=77 2.43	n=77 2.43	n=77 2.43
Other fee	n=131 2.09	n=140 0.76	n=131 2.24	n=140 0.77	n=131 2.63	n=140 0.71	n=131 2.67	n=140 1.15	n=131 2.24	n=140 1.28	n=131 1.19	n=140 1.17	n=77 10.21	n=77 10.31	n=77 10.47
One fee system*		n=140 38.95		n=140 38.84		n=140 38.76		n=140 38.36		n=140 37.81		n=140 13.54	n=77 61.65	n=77 61.17	n=77 62.77

Source: GSCF-1 and GSCF-2 Principal Questionnaires.
+ Response category in 2004

Table 8. Average Semester Required School Fees by Grade in 2000 and 2004 (Average Across Schools with Non-Missing and Non-Zero Values)*

Required Fees	Primary 1		Primary 2		Primary 3		Primary 4		Primary 5		Primary 6		Junior 1	Junior 2	Junior 3
	2000	2004	2000	2004	2000	2004	2000	2004	2000	2004	2000	2004	2004	2004	2004
Tuition	n=127 14.38	n=71 48.87	n=127 14.13	n=70 52.81	n=127 15.08	n=70 54.01	n=122 13.52	n=68 55.82	n=108 15.06	n=63 58.87	n=41 9.93	n=45 68.80	n=46 54.22	n=46 54.48	n=46 54.54
Book fee	n=126 55.56	n=70 39.36	n=126 57.47	n=70 40.06	n=126 73.75	n=68 47.94	n=122 69.73	n=67 50.91	n=108 93.75	n=62 52.89	n=41 48.10	n=45 55.73	n=46 111.00	n=46 111.20	n=46 91.35
Heating fee	n=80 12.51	n=27 22.26	n=80 12.53	n=27 22.26	n=79 12.65	n=26 21.96	n=78 12.66	n=27 22.26	n=71 12.68	n=24 22.54	n=19 14.34	n=20 24.50	n=20 32.50	n=20 32.50	n=20 32.50
Class fee	n=67 2.99	n=23 3.70	n=67 2.89	n=23 3.70	n=67 1.74	n=23 3.70	n=66 2.77	n=22 3.86	n=60 3.93	n=22 4.18	n=60 1.71	n=22 4.24	n=31 6.03	n=31 6.03	n=31 6.03
Other fee	n=22 12.44	n=11 9.73	n=23 12.74	n=11 9.82	n=23 14.97	n=11 9.00	n=23 15.21	n=11 14.64	n=20 14.65	n=12 14.92	n=10 15.64	n=10 16.40	n=18 43.67	n=18 44.11	n=19 42.42
One fee system**		n=73 74.70		n=73 74.49		n=72 75.36		n=70 76.73		n=68 77.85		n=23 82.39	n=35 135.63	n=35 134.57	n=35 138.09

Source: GSCF-1 and GSCF-2 Principal Questionnaires.

+ Some schools reported having a one fee system and reported a single fee, other schools reported having a one fee system and reported one fee and component fees, still other schools reported having a one fee system and did not report a one fee, but did report component fees. All of these configurations are included in this table.
**Response category in 2004

The structure of fees and fee changes between 2000 and 2004 are presented so that readers may peruse the individual fee items based on interest. Given the differences in adoption of the one fee system, reporting by principals, and patterns in the data, it is difficult to characterize the changing fee structure in a straightforward way. Among primary schools in the sample villages that reported charging tuition, the fee was substantially higher in 2004 than in 2000—ranging from about 49 to 69 RMB for different grades in the latter year, compared to 10 to 15 RMB in the earlier year. Book fees were another costly item among required fees, especially at the junior high school grades (see Table 8).

Next, we consider the one fee system in 2004. If we consider Table 8, which calculates averages only across non-zero, non-missing observations, it appears that at the primary level, the one fee system schools were charging between 74 and 82 RMB per semester in 2004. The semester fee jumped to 135 to 138 RMB for junior high schools. Again, it is likely that, at least in some schools, these fees do not represent the full fees paid by students, in light of the reporting of principals. “Voluntary” fees can also be charged by schools, for items ranging from insurance to textbooks to meal and boarding fees. From reporting by principals, the degree to which these voluntary fees are included in the one fee system is unclear. Table 9 shows voluntary school fees by type and year, averaged across all schools, and Table 10 shows the same fees averaged across

schools with non-zero, non-missing values. We focus here on Table 10, given the generally small numbers of schools reporting each voluntary fee type.

Table 9. Average Semester Voluntary School Fees by Grade in 2000 and 2004 (Average Across All Schools)

Voluntary Fees	Primary 1		Primary 2		Primary 3		Primary 4		Primary 5		Primary 6		Junior 1	Junior 2	Junior 3
	2000	2004	2000	2004	2000	2004	2000	2004	2000	2004	2000	2004			
Safety insurance fee	n=131 12.87		n=131 12.47		n=131 13.80		n=131 11.74		n=131 12.20		n=131 2.97				
Tutoring fee	n=131 0.00		n=131 0.00		n=131 0.00		n=131 0.08		n=131 0.08		n=131 0.00				
Boarding fee	n=131 0.46		n=131 0.46		n=131 0.61		n=131 0.69		n=131 0.69		n=131 0.53				
Meal fee	n=131 2.21		n=131 2.21		n=131 2.21		n=131 2.21		n=131 2.21		n=131 2.21				
Library fee	n=131 0.00		n=131 0.00		n=131 0.00		n=131 0.00		n=131 0.00		n=131 0.00				
Minban fee	n=131 0.29		n=131 0.29		n=131 0.29		n=131 0.29		n=131 0.29		n=131 0.23				
Over enrollment fee	n=131 0.00		n=131 0.00		n=131 0.00		n=131 0.00		n=131 0.00		n=131 0.00				
Textbook fee	n=131 20.81		n=131 22.63		n=131 25.25		n=131 27.01		n=131 24.07		n=131 10.07				
Exercise books fee	n=131 3.64		n=131 3.81		n=131 4.94		n=131 5.10		n=131 4.38		n=131 2.43				
Public security fee	n=131 0.05		n=131 0.05		n=131 0.05		n=131 0.05		n=131 0.05		n=131 0.00				
Fund for teacher retirement	n=131 0.00		n=131 0.00		n=131 0.00		n=131 0.00		n=131 0.00		n=131 0.00				
Winter vacation homework fee	n=131 2.15		n=131 2.31		n=131 2.38		n=131 2.33		n=131 2.11		n=131 0.59				
Graduation certification fee	n=131 0.10		n=131 0.11		n=131 0.11		n=131 0.11		n=131 1.33		n=131 0.35				
Other fee	n=131 0.14		n=131 0.14		n=131 0.14		n=131 0.14		n=131 0.17		n=131 0.10				
Health insurance ⁺	n=140 2.69		n=140 2.69		n=140 2.68		n=140 2.71		n=140 2.36		n=140 2.01	n=77 5.77	n=77 5.25	n=77 6.42	
Accident insurance ⁺	n=140 7.75		n=140 7.34		n=140 7.31		n=140 7.40		n=140 6.60		n=140 5.47	n=77 7.30	n=77 7.10	n=77 6.99	
Other insurance ⁺	n=140 0.57		n=140 0.36		n=140 0.36		n=140 0.43		n=140 0.46		n=140 0.66	n=77 1.84	n=77 2.08	n=77 0.00	
Tutoring fee ⁺	n=140 0.00		n=140 0.00		n=140 0.00		n=140 0.14		n=140 0.14		n=140 0.14	n=77 2.08	n=77 2.08	n=77 7.10	
Boarding fee ⁺	n=140 2.18		n=140 2.18		n=140 2.18		n=140 2.18		n=140 2.46		n=140 2.54	n=77 10.52	n=77 10.58	n=77 11.62	
Assistance fee ⁺	n=140 0.25		n=140 0.25		n=140 0.25		n=140 0.25		n=140 0.25		n=140 0.25	n=77 0.00	n=77 0.00	n=77 0.00	
Other ⁺	n=140 0.00		n=140 0.00		n=140 0.00		n=140 0.00		n=140 0.00		n=140 0.00	n=77 0.00	n=77 0.00	n=77 0.00	

Source: GSCF-1 and GSCF-2 Principal Questionnaires.

⁺ Response category wording in 2004

Table 10. Average Semester Voluntary School Fees by Grade in 2000 and 2004 (Average Across Schools with Non-Missing and Non-Zero Values)

Voluntary Fees	Primary 1		Primary 2		Primary 3		Primary 4		Primary 5		Primary 6		Junior 1	Junior 2	Junior 3
	2000	2004	2000	2004	2000	2004	2000	2004	2000	2004	2000	2004	2004	2004	2004
Safety insurance fee	n=64 26.34		n=64 25.52		n=64 28.24		n=64 24.02		n=59 27.09		n=25 15.59				
Tutoring fee	n=0 0.00		n=0 0.00		n=0 0.00		n=1 10.00		n=1 10.00		n=0 0.00				
Boarding fee	n=2 30.00		n=2 30.00		n=3 26.67		n=4 22.50		n=4 22.50		n=3 23.33				
Meal fee	n=2 145.00		n=2 145.00		n=2 145.00		n=2 145.00		n=2 145.00		n=2 145.00				
Library fee	n=0 0.00		n=0 0.00		n=0 0.00		n=0 0.00		n=0 0.00		n=0 0.00				
Minban fee	n=3 12.67		n=3 12.67		n=3 12.67		n=3 12.67		n=3 12.67		n=1 30.00				
Over enrollment fee	n=0 0.00		n=0 0.00		n=0 0.00		n=0 0.00		n=0 0.00		n=0 0.00				
Textbook fee	n=78 34.96		n=78 38.01		n=78 42.41		n=76 46.56		n=66 47.77		n=29 45.51				
Exercise books fee	n=58 8.22		n=58 8.61		n=59 10.96		n=59 11.32		n=50 11.46		n=23 13.86				
Public security fee	n=1 6.00		n=1 6.00		n=1 6.00		n=1 6.00		n=1 6.00		n=0 0.00				
Fund for teacher retirement	n=0 0.00		n=0 0.00		n=0 0.00		n=0 0.00		n=0 0.00		n=0 0.00				
Winter vacation homework fee	n=75 3.75		n=76 3.98		n=76 4.10		n=73 4.17		n=63 4.39		n=23 3.34				
Graduation certification fee	n=5 2.56		n=5 2.76		n=5 2.76		n=5 2.76		n=34 5.12		n=24 1.93				
Other fee	n=4 4.63		n=4 4.63		n=4 4.63		n=4 4.63		n=5 4.50		n=2 6.75				
Health insurance ⁺	n=19 19.79		n=19 19.84		n=19 19.74		n=19 19.95		n=17 19.41		n=12 23.50	n=8 55.50	n=8 50.50	n=8 61.75	
Accident insurance ⁺	n=54 20.09		n=53 19.40		n=53 19.32		n=53 19.55		n=48 19.25		n=33 23.21	n=28 20.07	n=28 19.54	n=28 19.21	
Other insurance ⁺	n=2 40.00		n=2 25.00		n=2 25.00		n=2 30.00		n=2 32.00		n=3 30.67	n=1 142.00	n=1 160.00	n=1 0.00	n=0 0.00
Tutoring fees ⁺	n=0 0.00		n=0 0.00		n=0 0.00		n=1 20.00		n=1 20.00		n=1 20.00	n=4 40.00	n=4 40.00	n=4 78.14	n=7 78.14
Boarding fees ⁺	n=3 101.67		n=3 101.67		n=3 101.67		n=3 101.67		n=4 86.25		n=5 71.00	n=17 47.65	n=17 47.94	n=18 49.72	n=18 49.72
Assistance fees ⁺	n=1 35.00		n=1 35.00		n=1 35.00		n=1 35.00		n=1 35.00		n=1 35.00	n=0 0.00	n=0 0.00	n=0 0.00	n=0 0.00
Other ⁺	n=0 0.00		n=0 0.00		n=0 0.00		n=0 0.00		n=0 0.00		n=0 0.00	n=0 0.00	n=0 0.00	n=0 0.00	n=0 0.00

Source: GSCF-1 and GSCF-2 Principal Questionnaires.

+ Response category wording in 2004

Common types of voluntary school fees in both primary and junior high schools include insurance and, in 2000, textbook fees. At the primary school level in 2004, accident insurance ranged from 19 RMB to 23 RMB (Table 10). Accident insurance in junior high school was roughly 20 RMB. In primary schools, the most expensive voluntary school fee observed was the boarding fee, but primary school boarding fees were exceedingly rare--3 to 5 schools in 2004 and 2 to 4 schools in 2000, depending on the grade considered. Overall, the low percentage of schools citing these fees is likely related to these costs being subsumed, for many schools, under the one fee system.

An additional school cost is uniforms. A little over one-third of primary schools reported using uniforms in 2000, with the figure rising to about 46 percent in 2004 (see Table 11). About 58 percent of junior high schools in 2004 reported using uniforms. Among schools reporting use of uniforms, the average cost was about 45 RMB at the primary level in both years, and about 51 RMB at the junior high school level in 2004.

	<u>Primary School</u>		<u>Junior High School</u>
	2000	2004	2004
Percent of schools with partial fee	n=131 52.67	n=140 78.57	n=77 89.61
Average percent of students who pay a partial fee in schools with partial fees	n=68 8.16	n=108 6.60	n=69 3.41
Percent of schools with uniforms	n=131 35.88	n=140 45.71	n=77 58.44
Average cost of uniform	n=46 45.30	n=63 45.33	n=45 51.04

Source: GSCF-1 and GSCF-2 Principal Questionnaires.

A final complicating factor in the school fees story is that many schools allow some percent of students to pay just a partial fee (see Table 11). In 2000, just over half of primary schools reported having students paying only partial fees, while in 2004, the number rose to 79 percent. Among primary schools reporting partial fees, about 8 percent of students paid partial fees in 2000, and about 7 percent did so in 2004. Among junior high schools reporting partial fees, the average percent of students paying partial fees was 3 percent.

In 2004, the one semester costs reported by parents were much more than the semester one fee reported by school principals, for primary and junior high schools (see Tables 5 and 8). This disparity is due in part to the fact that some of the costs incurred by parents are not paid to the schools.

Public, Private, and Hybrid Schools

Tsang (2000) notes that there is a wide variety of arrangements of management and finance, such that many schools are not easy to categorize as fully private or fully public. This makes research on the private sources of support for education complex.

Table 12 shows the distribution of primary and junior high schools by financial arrangement and, for primary schools, by year. In 2000, the questionnaire asked whether a school was “public” or “other”, and among the 131 primary schools in the sample, about 91 percent reported being public schools. Thus, while the vast majority of primary schools were public, almost one in ten schools had some other arrangement of finances.

	<u>Primary School</u>	<u>Junior High School</u>
Schools in 2000	n=131	
Public	90.84	
Private	0.00	
Other	9.16	
Schools in 2004	n=140	n=77
Public	75.00	98.70
Private	2.86	1.30
<i>Gongban Minzhu</i>	20.71	0.00
Other	1.43	0.00

Source: GSCF-1 and GSCF-2 Principal Questionnaires.

In 2004, the categories for school type were laid out in a more detailed way, and thus we have a little more information about financial arrangements. Categories in the 2004 questionnaire included public, private, a hybrid category called *gongban minzhu* (公办民助, literally “publicly run, people supported”) and other. *Gongban minzhu* schools are considered public schools, with faculty and staff provided by the government, but with private funding for school buildings. With this set of options available to principals, just three-fourths of school principals reported their school as a public school, while 21 percent reported *gongban minzhu*, 2.86 percent reported private, and 1.43 percent reported other types of arrangements. Thus, while public schools remain the majority of primary schools in rural Gansu, almost one in ten schools had some arrangement other than being a public school by 2000, and a hybrid arrangement of public-private funds characterized about one in five schools by 2004.

In our sample of 77 junior high schools serving sample villages, almost all (98.70 percent) remained public as of 2004. It is important to note that these public schools, and also primary schools officially classified as public, also receive some form of private funds, via fees collected from students.

Personnel Costs Reported by Schools

Official teachers are called *gongban* teachers (公办, literally “publicly-run”), which means that they are credentialed and are employed by the government.

The average salary for an official teacher reported by principals of primary schools was 577 RMB per month in 2000 and 935 RMB per month in 2004.

Average bonuses reported in 2000 were 83 RMB. In 2004, average bonuses for those who received them were 232 RMB. The smaller number of schools that hired substitute *daike* teachers (代课) paid them much less, on average: just 154 RMB in 2000 and 188 RMB in 2004 (Table 13). *Daike* teachers are not credentialed teachers, may or may not have the appropriate education level, and are employed by the local community.

In junior high schools, data from principals for 2004 show that the average monthly salary paid to *gongban* teachers was 953 RMB and the average bonus for those receiving bonuses was 292 RMB. For the smaller number of junior high schools reporting salaries for *daike* teachers, the average was 337 RMB.

Table 13. Principal Reports of Teacher Salary by School Level in 2000 and 2004

	<u>Primary School</u>		<u>(t-values)</u>	<u>Junior High School</u>
	2000	2004		2004
Average monthly salary of <i>gongban</i> teacher	n=129 577.19	n=135 935.49	16.96*	n=77 952.58
Average monthly salary of <i>daike</i> teacher	n=72 153.75	n=84 188.30	1.53	n=32 337.03
Average annual teacher bonus	n=128 82.89			
Average annual bonus for those who received them ⁺		n=75 231.64 ⁺⁺		n=54 292.30 ⁺⁺

Source: GSCF-1 and GSCF-2 Principal Questionnaires.

+ The phrasing of the question changed in 2004

++ This average is for principals who reported non-zero values. Including principals who reported zero values, the average 2004 primary school bonus was 124.09 (n=140) and the average 2004 Junior high school bonus was 204.99 (n=77).

H₀: $\mu_{\text{PRIMARY2000}} = \mu_{\text{PRIMARY2004}}$

*=p<.05

Salary averages can also be calculated from reports of teachers about their actual salaries, rather than from principal reports of school averages. Table 14 shows teacher reports of remuneration and arrears in 2000 and 2004. Primary school teachers reported an average total salary of 527 RMB per month in 2000. In 2004, the average total salary was significantly higher, at 875 RMB. Also in 2004, junior high school teachers reported an average total salary of 956 RMB.

Table 14. Teacher Reports of Remuneration and Arrears by School Level in 2000 and 2004

	Primary School		(t-values)	Junior High School
	2000	2004		2004
Average monthly total teacher salary	n=1002 526.91	n=1017 875.29	22.74* ¹	n=1327 955.57
School pays salary on time ⁺	n=1005	n=1018	N/A	n=1332
Always	7.86	39.49		32.21
Usually	4.68	17.98		23.57
Sometimes	55.82	35.95		34.16
Never	31.64	6.58		10.06
Does the school owes you any wages right now? ⁺⁺	n=923	n=1018		n=1332
Percent Yes	90.57	42.04		46.70

Source: GSCF-1 and GSCF-2 Teacher Questionnaires.

+The question wording for 2000 and 2004 were different. In 2000, "Does your school pay your salary on time?" In 2004, "From September 2003-June 2004 did you receive your salary on time?"

++The phrasing of the question changed slightly, but the English translation remains the same.

¹ H₀: μPRIMARY2000=μPRIMARY2004

*=p<.05

One important problem in recent years has been delayed payment of teacher salaries. In 2000, just 13 percent of primary school teachers reported that their salary was usually or always paid on time. About 91 percent of primary school teachers reported that they were owed wages at the time of the survey.

In 2004, about 57 percent of primary school teachers reported that their salary was usually or always paid on time. About 42 percent of primary teachers were owed wages at the time of the survey. These findings suggest that meeting personnel costs remains an important problem at rural schools, but seems to be less of a problem than in the past. This improvement might be related to efforts to recentralize finance to the county level (Tsang and Ding, 2005: 29 [note xxix]).

Teachers

Primary Schools - Background

Table 15 shows average teacher age, years of experience, and years a teacher has taught in the same school in 2000 and 2004. The average age of primary school teachers in 2000 was 36 years old. Teachers had an average of 15 years of teaching experience, and had taught in the current place of employment for an average of 7 years. The situation in 2004 was similar. The average age of a primary school teacher was 37 years old, and he or she had an average of 16 years of experience, with 8 years of experience in the current school.

Table 15. Average Teacher Age and Experience by School Level in 2000 and 2004				
	Primary School		(t-values)	Junior High School
	2000	2004		2004
Average teacher age (in years)	n=1006 35.5	n=1018 36.57	2.15*	n=1332 32.13
Average number of years teaching ⁺	n=1009 14.77	n=1018 16.03		n=1332 10.72
Average number of years in current school	n=1009 7.24	n=1018 8.00	2.19*	n=1332 6.59

Source: GSCF-1 and GSCF-2 Teacher Questionnaires.

+ The phrasing of the question changed slightly, but the English translation remains the same.

$H_0: \mu_{\text{PRIMARY2000}} = \mu_{\text{PRIMARY2004}}$

*= $p < .05$

Table 16 shows additional teacher background characteristics for 2000 and 2004, including the following: local versus non-local status, gender, marital status, credentials, and participation in outside work. This table shows that in our sample, more than 90 percent of teachers in both years are from the same county.

Table 16. Teacher Characteristics by School Level in 2000 and 2004

	<u>Primary School</u>		<u>chi2/(t-values)</u>	<u>Junior High School</u>	
	2000	2004		2004	2004
Teacher birthplace	n=1009	n=1018	22.56 (4)*		n=1332
Same village	35.08	28.78			20.35
Same township, different village	33.20	29.86			25.38
Same county, different township	26.56	35.76			45.42
Same province, different county	4.16	4.81			7.06
Other province	0.99	0.79			1.80
Gender of teacher	n=1004	n=1018	21.46 (1)*		n=1332
Male	62.45	52.26			71.85
Female	37.55	47.74			28.15
Ethnicity	n=1009	n=1018	N/A		n=1332
Han	97.22	97.94			98.72
Mongol	0.10	1.08			0.53
Hui	1.98	0.39			0.30
Tibetan	0.30	0.20			0.08
Tujia	0.30	0.39			0.23
Dong Xiang+	0.10				
Manchu++		0.00			0.08
Tu++		0.00			0.08
Marital status	n=1009	n=1018	4.13 (3)		n=1332
Never Married	17.24	16.70			23.20
Currently Married	81.96	81.63			76.43
Divorced	0.40	0.49			0.30
Widowed	0.40	1.18			0.08
Teacher is a credentialed teacher	n=1009		N/A		
Percent Yes	80.28				
Teacher is:		n=1018	N/A		n=1332
A <i>Gongban</i> Teacher		83.20			92.64
A <i>Minban</i> Teacher		3.93			0.75
A <i>Daike</i> Teacher		11.59			5.63
Other		1.28			0.98
Teacher is a farmer	n=1007	n=1018	4.13* ¹		n=1332
Percent Yes	48.86	39.78			35.51
Teacher has a part-time job during winter and summer holiday	n=1009	n=1018	7.90* ¹		n=1332
Percent Yes	19.92	7.96			7.28

Source: GSCF-1 and GSCF-2 Teacher Questionnaires.

+ Answer Option only in 2000

++ Answer Options only in 2004

1 $H_0: \mu_{PRIMARY2000} = \mu_{PRIMARY2004}$

*=p<.05

Qualifications and Status

There are three main teacher categories: official (*gongban*, 公办), unofficial (*minban*, 民办, literally “people run”), and substitute (*daike*, 代课). *Minban* teachers are not credentialed, may or may not have the sufficient educational attainment for the job, and are employed at the local community level. *Daike* teachers are considered temporary substitute teachers. Like *minban* teachers, *daike* teachers are not credentialed and may not have an appropriate educational level for the position they hold, and they are employed at the local community level.

In 2000, teachers responded to a single question about whether they were a credentialed teacher: “Are you a credentialed teacher?” Credentialed teachers are *gongban* teachers employed by the government. Most primary teachers in 2000 were *gongban* teachers: 80 percent of primary teachers reported being a credentialed teacher.

The 2004 questionnaire included more detailed teacher response categories including *gongban*, *minban*, *daike*, and other. In 2004, 83 percent of primary teachers reported being a *gongban* teacher. Roughly 4 percent of primary school teachers reported being a *minban* teacher in 2004. About 12 percent of

primary school teachers were *daike* teachers in 2004. About 1 percent of primary school teachers in 2004 reported being in the “other” category.

Table 17 shows teacher educational levels for primary and junior high schools in 2004 within their teaching category (*gongban*, *minban*, *daike*, and other). The wording of questions about teacher educational levels was more detailed in 2004 (primary school, junior high school, senior high school, vocational middle school, vocational college, four-year college, graduate school, and other) than in 2000. In 2000, the focus was on the teacher graduation year and type of school, limited to middle school, senior high school, and vocational and four-year colleges. Due to the different question wording in the two years, we present teacher educational levels for year 2004 only.

Table 17. Teacher Education Level by Teacher Category and School Type in 2004 (Percentages)

Teacher Category	Primary School	Junior High School
<i>Gongban</i> Teacher	n=847	n=1234
Primary School	0.00	0.00
Junior High School	2.48	0.16
Senior High School	15.47	1.30
Vocational Middle School	39.91	7.37
Vocational College	40.14	73.74
Four-Year Degree	2.01	17.34
Graduate School	0.00	0.08
Other	0.00	0.00
<i>Minban</i> Teacher	n=40	n=10
Primary School	0.00	0.00
Junior High School	10.00	0.00
Senior High School	35.00	30.00
Vocational Middle School	35.00	20.00
Vocational College	20.00	50.00
Four-Year Degree	0.00	0.00
Graduate School	0.00	0.00
Other	0.00	0.00
<i>Daiké</i> Teacher	n=118	n=75
Primary School	0.00	0.00
Junior High School	8.47	0.00
Senior High School	29.66	4.00
Vocational Middle School	41.53	12.00
Vocational College	19.49	78.67
Four-Year Degree	0.85	5.33
Graduate School	0.00	0.00
Other	0.00	0.00
Other Teacher	n=13	n=13
Primary School	0.00	0.00
Junior High School	7.69	0.00
Senior High School	15.38	0.00
Vocational Middle School	46.15	15.38
Vocational College	30.77	84.62
Four-Year Degree	0.00	0.00
Graduate School	0.00	0.00
Other	0.00	0.00

Source: GSCF-2 Teacher Questionnaires.

In 2004, as many as 40 percent of *gongban* primary teachers had attended a vocational college, 40 percent had attended a vocational middle school, and two percent had a four-year tertiary degree. Just 2.5 percent had only a junior high school degree. There were few *minban* teachers: just 40. Of these few, ten percent had a junior high school degree, 70 percent had a secondary level degree (half of these vocational), and 20 percent had a vocational college degree.

Similarly, 8.47 percent of *daike* primary teachers had only a junior high school degree, while about 30 percent had a senior high school degree and 41.5 percent had a vocational middle school degree. About 20 percent had any kind of tertiary degree. The sample size of “other” teachers was too small to make an interpretation meaningful.

Table 18. Teacher Rank by School Level in 2000 and 2004 (Percentages)

	<u>Primary School</u>		<u>Junior High School</u>
	2000 n=895	2004 n=999	2004 n=1327
Intern	10.39	13.81	10.40
Primary, Level Two	20.67	17.62	3.01
Primary, Level One	48.60	40.44	7.99
Primary, Level High	16.76	24.02	2.56
Middle School, Level Three ⁺		0.60	15.90
Middle School, Level Two	2.68	2.70	41.82
Middle School, Level One	0.89	0.80	17.56
Middle School, Level High	0.00	0.00	0.75

Source: GSCF-1 and GSCF-2 Teacher Questionnaires.

+Answer Option Available in 2004 only

Teachers in China are ranked each year by the principal and school district. In primary school, the levels include 3, 2, 1, and high, where level 3 is the lowest ranking, corresponding to an internship status, and high is the highest ranking. Table 18 shows teacher ranks by year. More teachers held a primary, level high rank in 2004 than in 2000. In 2000, most primary school teachers reported that they held the rank of primary, level one (49 percent) with fewer holding a primary, level high (17 percent). Roughly 40 percent of teachers held a rank of primary, level one in 2004 and about 24 percent held the rank of primary, level high.

Workloads and Work Activities

Substantial numbers of teachers work outside of teaching, though the percentage doing so may be dropping. In 2000, 49 percent of primary school teachers reported also working as farmers, and in 2004, 40 percent of primary school teachers reported working as farmers (Table 16). In 2004, fewer primary school teachers held a part-time job during the winter or summer holiday (8 percent) than in 2000 (20 percent). Table 19 describes teacher workloads and work activities in 2000 and 2004. Consistent with findings about outside work in Table 16, Table 19 shows that teachers in 2004 spent less time at part-time outside work (2 hours per week) than teachers in 2000 (6 hours per week).

Table 19. Teacher Workload by School Level in 2000 and 2004

	<u>Primary School</u>		<u>(t-values)</u>	<u>Junior High School</u>
	2000	2004		2004
Average number of classes taught each week		n=1018 20.06		n=1332 13.56
Average number of hours spent preparing for class each week	n=1009 12.28	n=1018 9.72	11.24*	n=1332 9.92
Average number of hours spent grading papers each week	n=1009 11.79	n=1018 10.32	6.07*	n=1332 10.70
Average number of hours spent lecturing each week	n=1009 14.95			
Average number of hours spent on career development each week	n=1000 5.19			
Average number of hours spent on political and professional study each week		n=1018 3.13		n=1332 3.12
Average number of hours spent on part-time work each week, including farming, business, and other money making activities	n=1009 5.53	n=1018 2.06	11.26*	n=1332 1.66

Source: GSCF-1 and GSCF-2 Teacher Questionnaires.

H₀: μPRIMARY2000=μPRIMARY2004

*=p<.05

Primary school teachers reported spending an average of 15 hours lecturing each week in 2000. In 2004, primary school teachers reported teaching 20 classes each week. In 2000, primary school teachers reported spending 12 hours a week preparing for classes and 12 hours grading papers; these numbers dropped to 10 hours for preparing for classes and 10 hours a week grading papers in 2004. In 2000, primary school teachers reported spending 5 hours a week on career development. In 2004, primary school teachers spent an average of 3 hours on political and professional development each week.

Professional Development

Table 20 shows professional development activities conducted by teachers in 2004. The 2004 questionnaire included questions about professional development within the school, at another school, at district-level training sessions, at teacher training institutes, and at training sessions led by educational project experts. Each school has a *jiaoyanzu* (教研组), which is a teaching and research section that conducts meetings and provides support for teachers. There are separate subject-specific *jiaoyanzu*, such as for math, language, and science. Each *jiaoyanzu* organizes peer observations, shares new materials, and disseminates information from the upper levels of administration to teachers.

Primary school teachers in 2004 participated more often in professional development activities in their own school—such as through the *jiaoyanzu*—than in activities conducted at another school or conducted by someone outside their own school. For example, at the school level, 48 percent of primary school teachers participated in activities organized by their own school once a week, 38 percent participated in peer observation and evaluation of teaching in their school once a week, and 48 percent were involved in teaching and research activities in their school once a week. Roughly 32 percent of primary school teachers participated in teaching and research at another school one to two times a semester; 8 percent did so once a month, and 3 percent did so on a weekly basis.

Less than half of primary school teachers had ever received training conducted by an expert of an educational project.

Table 20. Teacher Professional Development Activities by School Level in 2004

	<u>Once a Week</u>	<u>Once a Month</u>	<u>One to Two Times a Semester</u>	<u>Once</u>	<u>Never</u>
Peer observation and evaluation of teaching					
Primary School (n=1018)	38.11	27.21	26.42	3.63	4.62
Junior High School (n=1332)	35.81	29.20	25.00	6.53	3.45
Model lesson at this school or another school					
Primary School (n=1018)	10.90	20.63	48.04	10.41	10.02
Junior High School (n=1332)	11.64	23.95	38.81	13.59	12.01
Short term training activities at a teacher-training institute					
Primary School (n=1018)	1.96	2.46	27.31	25.74	42.53
Junior High School (n=1332)	2.78	3.83	29.43	26.65	37.31
Short term training conducted by an expert of an educational project					
Primary School (n=1018)	1.67	3.34	18.76	23.58	52.65
Junior High School (n=1332)	1.43	2.10	17.34	28.90	50.23
District level teaching and research activities (not including model lessons)					
Primary School (n=1018)	3.93	19.06	41.45	19.25	16.31
Junior High School (n=1332)	4.95	10.89	29.05	19.89	35.21
Teaching and research activities at another school					
Primary School (n=1018)	3.44	8.25	32.22	21.71	34.38
Junior High School (n=1332)	3.08	5.33	22.67	20.12	48.80
Teaching and research activities at your own school (including the teaching and research section)					
Primary School (n=1018)	47.54	25.25	18.07	4.13	5.01
Junior High School (n=1332)	53.83	24.77	13.21	5.18	3.00
Activities organized by your own school					
Primary School (n=1018)	47.64	22.89	16.01	4.22	9.23
Junior High School (n=1332)	34.46	31.08	20.65	4.88	8.93

Source: GSCF-2 Teacher Questionnaire.

Satisfaction with Various Dimensions of Work

Table 21 describes teacher satisfaction with various dimensions of work. In 2000, almost all primary school teachers liked teaching (96 percent) and were content with teaching (96 percent). Yet, almost one in five primary school teachers (18 percent) wanted to change their profession.

Table 21. Teacher Reports of Satisfaction by School Level in 2000 and 2004 (Percentages)

	<u>Primary School</u>		<u>Junior High School</u>
	2000	2004	2004
Do you like teaching?	n=1009		
Percent Yes	95.74		
Are you content teaching?	n=1009		
Percent Yes	95.94		
I am satisfied with teaching as job.	n=1018		n=1332
Strongly Disagree	2.16		3.00
Disagree	10.31		16.97
Agree	58.64		61.71
Strongly Agree	28.88		18.32
Do you want to change your profession?	n=1006		
Percent Yes	17.59		
I want to change my career.	n=1018		n=1332
Strongly Disagree	15.32		12.09
Disagree	61.00		51.88
Agree	19.06		29.43
Strongly Agree	4.62		6.61
I am satisfied with my salary.	n=1018		n=1332
Strongly Disagree	17.68		17.57
Disagree	34.18		42.94
Agree	41.45		36.71
Strongly Agree	6.68		2.78
Apart from my salary, my job benefits are good.	n=1018		n=1332
Strongly Disagree	44.50		46.10
Disagree	44.30		41.82
Agree	9.63		10.06
Strongly Agree	1.57		2.03
Are you satisfied with the assessment of teacher titles?	n=991		
Percent Yes	74.57		
The evaluation of teachers is fair and equitable	n=1018		n=1332
Strongly Disagree	10.02		11.34
Disagree	24.95		30.33
Agree	60.61		55.03
Strongly Agree	4.42		3.30
Are you satisfied with the selection of outstanding teachers?	n=989		
Percent Yes	80.79		
The evaluation of outstanding teachers is fair and equitable	n=1018		n=1332
Strongly Disagree	5.50		9.98
Disagree	23.77		30.41
Agree	64.64		56.46
Strongly Agree	6.09		3.15

Source: GSCF-1 and GSCF-2 Teacher Questionnaires.

To seek out a broader scale of attitudes about teaching, we worded the questions differently in 2004, asking teachers to rate degree of agreement with various statements about teaching. This wording continued to reveal a high degree of reported satisfaction, but again a considerable degree of desire to change careers. Roughly 88 percent of primary school teachers agreed or strongly agreed with the statement, "I am satisfied with teaching as a job". Almost one in four primary school teachers (25 percent) agreed or strongly agreed with the statement, "I want to change my career".

To understand why teachers might want to change careers, our 2004 questionnaire examined teacher satisfaction with salary, job benefits and evaluation of teachers. In 2004, less than half of teachers were satisfied with their salary (48 percent agreed or strongly agreed with the statement, "I am satisfied with my salary"). Interestingly, very few teachers were satisfied with job benefits. Few primary school teachers in 2004 agreed (10 percent) or strongly agreed (2 percent) with the statement, "Apart from my salary, my job benefits are good".

Another dimension of job satisfaction is that associated with the evaluation of teachers. Here again, we used different wording in 2000 and 2004, and so draw insights from both years but cannot assess change by comparing the years. Most teachers, but not a vast majority, report satisfaction with this

dimension of work. In 2000, 75 percent of primary school teachers responded “yes” to a question about whether they were satisfied with teacher assessment, and 81 percent responded affirmatively to a question about whether they were satisfied with the selection of outstanding teachers.

In 2004, the questions suggested more strongly that a substantial minority of teachers was not satisfied with this dimension of their jobs. For example, 65 percent of primary school teachers agreed or strongly agreed with the statement, “The evaluation of teachers is fair and equitable”. Roughly 71 percent of primary school teachers in 2004 agreed or strongly agreed with the statement, “The evaluation of outstanding teachers is fair and equitable”.

Attitudes about School Management and School Culture

Table 22 shows distributions of teacher responses—strongly disagree to strongly agree—to statements about principals’ leadership. Table 23 shows responses to statements about principal school management strategies, and Table 24 shows responses to statements about relationships with principals.

On the 2004 teacher questionnaire, teachers were asked their views on the school culture and the principal’s leadership skills (Table 22). Most teachers in 2004 felt that the principal promoted cooperation among teachers and worked to improve the school environment. Roughly 89 percent of primary school teachers agreed or strongly agreed with the statement, “The principal works hard to

improve the school environment and the construction of school culture”. About 89 percent of primary school teachers agreed or strongly agreed with the statement, “The principal emphasizes teacher cooperation”, and 84 percent agreed or strongly agreed with the statement, “The principal does well in organizing teachers to work together”. Most principals were reported by teachers to hold regular staff meetings. About 88 percent of primary teachers agreed or strongly agreed with the statement, “The principal regularly holds staff meetings” (Table 22).

Table 22. Teacher Responses to Statements about Principals' Leadership by School Level in 2004 (Percentages)

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Undecided</u>	<u>Agree</u>	<u>Strongly Agree</u>
The principal does not give new teachers guidance.					
Primary School Teachers (n=1018)	9.53	56.68	18.37	13.65	1.77
Junior High School Teachers (n=1332)	9.83	55.03	17.87	14.41	2.85
The principal is a very good source of information for teaching.					
Primary School Teachers (n=1018)	2.16	9.82	21.91	55.70	10.41
Junior High School Teachers (n=1332)	1.95	10.06	25.00	52.25	10.74
The principal does well in organizing teachers to work together.					
Primary School Teachers (n=1018)	1.18	4.72	10.12	60.31	23.67
Junior High School Teachers (n=1332)	1.28	7.36	11.26	58.93	21.17
The principal encourages teachers to use different teaching approaches.					
Primary School Teachers (n=1018)	0.20	1.47	5.60	65.32	27.41
Junior High School Teachers (n=1332)	0.83	3.68	7.06	67.19	21.25
The principal regularly holds staff meetings.					
Primary School Teachers (n=1018)	1.57	3.24	7.37	68.57	19.25
Junior High School Teachers (n=1332)	0.83	6.46	4.95	64.26	23.50
The principal emphasizes cooperation among teachers.					
Primary School Teachers (n=1018)	0.69	2.75	7.47	71.02	18.07
Junior High School Teachers (n=1332)	0.53	4.05	7.73	72.67	15.02
The principal works hard to improve the school environment and the construction of school culture.					
Primary School Teachers (n=1018)	1.38	3.24	6.19	63.06	26.13
Junior High School Teachers (n=1332)	0.68	5.11	5.18	63.36	25.68
The principal communicates with all the school staff and makes them aware of their importance to the school.					
Primary School Teachers (n=1018)	1.47	7.17	13.56	59.43	18.37
Junior High School Teachers (n=1332)	2.10	9.98	17.04	55.93	14.94

Source: GSCF-2 Teacher Questionnaire.

A majority of teachers felt that their principal upheld high standards for students: 83 percent of primary school teachers agreed or strongly agreed with the statement, "The principal has strict requirements for the students" (Table 23). In addition, Table 23 shows that most teachers, though not the vast majority, reported that the principal communicated with and received support from parents: 70 percent of primary school teachers disagreed or strongly disagreed with the statement, "The principal does not communicate much with parents". Similarly, 71 percent of primary school teachers agreed or strongly agreed with the statement, "The principal receives support from parents". Most teachers reported that their principal was open to new ideas. About 72 percent of teachers disagreed or strongly disagreed with the statement, "The principal is resistant to new ideas" (Table 23).

Table 23. Teacher Responses to Statements about Selected Principal School Management Strategies by School Level in 2004 (Percentages)					
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
The principal carries out fundraising activities for the school.					
Primary School Teachers (n=1018)	6.88	19.55	18.86	47.84	6.88
Junior High School Teachers (n=1332)	8.03	19.74	21.77	46.10	4.35
The principal has strict requirements of students.					
Primary School Teachers (n=1018)	0.88	6.39	9.63	69.55	13.56
Junior High School Teachers (n=1332)	3.30	10.96	8.78	64.86	12.09
The principal has poor disciplinary management.					
Primary School Teachers (n=1018)	10.02	57.47	11.69	19.25	1.57
Junior High School Teachers (n=1332)	9.38	54.28	12.54	22.22	1.58
The principal is resistant to new ideas.					
Primary School Teachers (n=1018)	11.98	59.72	14.44	11.79	2.06
Junior High School Teachers (n=1332)	13.96	59.83	14.71	9.08	2.40
The principal does not communicate much with parents.					
Primary School Teachers (n=1018)	11.20	58.64	15.52	13.06	1.57
Junior High School Teachers (n=1332)	9.38	55.26	16.67	17.42	1.28
The principal receives support from parents.					
Primary School Teachers (n=1018)	1.96	6.88	20.24	58.74	12.18
Junior High School Teachers (n=1332)	0.68	9.31	26.05	55.41	8.56
The principal emphasizes a cooperative relationship between the school and the community.					
Primary School Teachers (n=1018)	1.18	4.72	12.57	63.46	18.07
Junior High School Teachers (n=1332)	0.53	6.83	15.47	59.23	17.94
The principal uses resources appropriately.					
Primary School Teachers (n=1018)	1.77	7.07	17.19	63.56	10.41
Junior High School Teachers (n=1332)	3.30	9.38	16.52	61.49	9.31

Source: GSCF-2 Teacher Questionnaire.

In addition, most teachers reported that their principals supported teaching innovation: roughly 93 percent of teachers agreed or strongly agreed with the statement, “The principal encourages teachers to use different teaching approaches” (Table 22). Moreover, our data suggest a good deal of supervision of teacher behavior in the classroom. Three-fourths of primary school teachers disagreed or strongly disagreed with the statement, “The principal has never observed me teaching in the classroom” (Table 24).

Interestingly, although principals met regularly with teachers, encouraged cooperation, and encouraged new teaching methods, less than half of primary school teachers felt that the principal included them in making school management decisions: 48 percent agreed or strongly agreed with the statement, “The principal lets me participate in school management decisions” (Table 24). On the other hand, referring back to Table 23, there is not a widespread impression of miss-allocation of resources on the part of principals. 74 percent of teachers agreed or strongly agreed with the statement, “The principal uses resources appropriately” (Table 23).

Table 24. Teacher Responses to Statements about Relationships with Principals by School Level in 2004 (Percentages)					
	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Undecided</u>	<u>Agree</u>	<u>Strongly Agree</u>
The principal gives me opportunities for personal development.					
Primary School Teachers (n=1018)	1.77	7.86	16.99	61.98	11.39
Junior High School Teachers (n=1332)	1.28	12.69	16.82	60.06	9.16
The principal has never observed me in class.					
Primary School Teachers (n=1018)	15.91	59.53	8.25	13.75	2.55
Junior High School Teachers (n=1332)	13.81	61.41	6.91	15.54	2.33
The principal draws conclusions about me without having observed my teaching.					
Primary School Teachers (n=1018)	12.97	58.55	16.99	10.02	1.47
Junior High School Teachers (n=1332)	10.44	57.51	18.09	12.61	1.35
The principal uses rewards and punishment as a means to influence my teaching.					
Primary School Teachers (n=1018)	6.68	39.00	15.52	35.46	3.34
Junior High School Teachers (n=1332)	5.63	33.11	17.87	37.16	6.23
The principal has high expectations for me.					
Primary School Teachers (n=1018)	1.77	7.96	24.46	56.29	9.53
Junior High School Teachers (n=1332)	1.20	9.91	27.40	53.98	7.51
The principal lets me participate in school management decisions.					
Primary School Teachers (n=1018)	5.70	24.07	22.00	43.71	4.52
Junior High School Teachers (n=1332)	11.34	34.38	21.92	29.43	2.93
The principal is very respectful towards me.					
Primary School Teachers (n=1018)	1.67	8.94	19.74	58.74	10.90
Junior High School Teachers (n=1332)	1.50	7.96	20.65	63.36	6.53

Source: GSCF-2 Teacher Questionnaire.

On a personal level, Table 24 shows that most teachers feel respected and supported by their principals. About 70 percent of primary school teachers agreed or strongly agreed with the statement, “The principal is very respectful towards me”. About 73 percent of teachers agreed or strongly agreed with the statement, “The principal gives me opportunities for personal development”.

Junior High Schools - Background

We refer back to Table 15 and see that in 2004, a junior high school teacher was 32 years old, on average, with 11 years of teaching experience, and had taught in the same school for 7 years. Table 16 provides basic information about teachers and their hometown, gender, ethnicity, and teaching credentials.

Similar to primary school teachers, over 90 percent of junior high school teachers are teaching in the same county. Junior high school teachers were predominantly male (roughly 72 percent) and overwhelmingly Han Chinese (roughly 99 percent) in 2004. Over three-fourths of junior high school teachers were married: 76 percent in 2004. In 2004, roughly 93 percent of junior high school teachers reported being a *gongban* teacher. Less than 1 percent of junior high school teachers reported being a *minban* teacher or other teacher. About 6 percent of junior high school teachers were *daike* teachers.

Qualifications and Status

We refer back to Table 17 to discuss educational qualifications and status for junior high school teachers. As discussed above, response categories for teacher educational levels in 2004 included primary school, junior high school, senior high school, vocational middle school, vocational college, four-year college, graduate school, and other. Table 17 shows that junior high school *gongban* teachers had primarily attended vocational colleges and four-year colleges: 74 percent had attended a vocational college and 17 percent had attended a four-year college. Junior high schools hired very few *minban*, *daike*, or other kinds of teachers: there were just 10 *minban* teachers in the sample, 75 *daike* teachers, and 13 other teachers. Among those *daike* teachers present, most had attended vocational college (79 percent).

Table 18 describes teacher ranks in 2004. There are four junior high school teacher rankings, including levels 3, 2, 1, and high, where 3 is the lowest and high is the highest ranking. In 2004, most junior high school teachers reported to have a middle school, level two 2 or level 1 qualification: 42 percent and 18 percent, respectively.

Workloads and Work Activities

We refer back to Table 16 and Table 19 to investigate the workload of junior high school teachers. In 2004, junior high school teachers reported

spending an average of 10 hours preparing classes each week, 11 hours grading papers, and 3 hours a week on political and professional study. About 36 percent of junior high school teachers reported being farmers and 7 percent reported having a part-time job in 2004 (Table 16). Teachers spent about 2 hours per week at other work, including farming (Table 19).

Professional Development

As described above, Table 20 shows professional development activities for teachers. Similarly to primary school teachers, junior high school teachers participated more frequently in professional development activities in their own school than at other schools, at district-level sessions, or at teacher training institutions. At their own school, 36 percent of junior high school teachers reported participating in peer observation and evaluation of teaching once a week, 54 percent participated on a weekly basis in teaching and research activities led by their teaching and research section (*jiaoyanzu*) and 34 percent participated weekly in activities organized by their school in 2004. Roughly 49 percent of junior high school teachers had never participated in teaching and research activities in another school, and 35 percent had never participated in district-level teaching and research activities in 2004.

Satisfaction with Various Dimensions of Work

We refer back to Table 21 to examine junior high school teacher satisfaction with various dimensions of work. Roughly 80 percent of junior high school teachers agreed or strongly agreed with the statement, “I am satisfied with teaching as a job” in 2004—one in five teachers was not satisfied. Interestingly, a full 36 percent of junior high school teachers agreed or strongly agreed with the statement, “I want to change my career”.

We next examined teacher satisfaction with salary and benefits in order to understand how 80 percent of teachers were satisfied with teaching as a job, yet 36 percent want to change their careers. We found that salary was an area of dissatisfaction: just 39 percent of junior high school teachers agreed or strongly agreed with the statement, “I am satisfied with the salary”. Still fewer teachers believed that their job benefits were good: only 12 percent of junior high school teachers agreed or strongly agreed with the statement, “Apart from my salary, my job benefits are good”.

Teacher interest in changing careers might also be linked to a low level of satisfaction with teacher evaluations. Small majorities of junior high school teachers reported fair and equitable evaluation of teachers (58 percent agreed or strongly agreed with the statement, “The evaluation and ranking of teachers in

the school is fair and equitable”), and reported satisfaction with the evaluation of outstanding teachers (60 percent).

Attitudes about School Management and School Culture

We refer back to Tables 22, 23, and 24 to understand junior high school teacher’s views on school management and school culture. In 2004, junior high school teachers’ views on school management were similar to those of primary school teachers. Tables 22 and 23 show that teachers felt that their principal supported cooperation among teachers, among the school and community, and that the principal worked hard to improve the school environment and culture. For example, about 89 percent of teachers agreed or strongly agreed with the statement, “The principal works hard to improve the school environment and the construction of school culture”.

Teacher cooperation may be an important piece of the school environment. In our sample, roughly 88 percent of teachers agreed or strongly agreed with the statement, “The principal emphasizes teacher cooperation” (Table 22). Having a strong relationship with the community may also be important for improving the school environment, and 77 percent of teachers agreed or strongly agreed with the statement, “The principal emphasizes a cooperative relationship between the school and the community” (Table 23). Teachers reported that principals supported their use of different teaching methods: 88 percent of teachers agreed

or strongly agreed with the statement, “The principal encourages teachers to use different teaching approaches” (Table 22). Most teachers view principals as open-minded: 74 percent of teachers disagreed or strongly disagreed with the statement, “The principal is resistant to new ideas” (Table 23).

Three-fourths of teachers reported that their principals observed their teaching (75 percent disagreed or strongly disagreed with the statement, “My principal has not observed me in class”) (Table 24). Less than 35 percent of teachers reported that their principals included them in management decisions, (32 percent of teachers agreed or strongly agreed with the statement, “The principal lets me participate in management decisions”) (Table 24). Roughly 71 percent of teachers felt that the principal used resources appropriately (agreed or strongly agreed with the statement, “The principal uses resources appropriately”) (Table 23). Principals treated teachers respectfully, in teachers’ views. About 70 percent of teachers agreed or strongly agreed with the statement “The principal is very respectful towards me” (Table 24).

Classroom Learning Environments

Some of the goals of the curriculum and teaching reforms being implemented in China at present are intended to make the classroom a more caring, engaging, and interactive place for children. For example, Ministry of

Education (2002) documents cited in Sargent (2005) characterize the new "quality education" as follows:

"Classroom teaching should lay emphasis on the student's own thinking process...This requires the teacher to be good at creating an open classroom environment, fostering a positive and comfortable atmosphere and encouraging students' expressions of new, different and unconventional ideas...Teachers must work hard to protect students' curiosity, desire for learning, and imagination...Learning arises out of questioning...Teachers should respect students' individual personalities, and pay attention to the differences between the students in order to satisfy the learning needs of individuals, should create an educational environment that ... enables every student to develop their potentialities fully" (Ministry of Education 2002: 9).

Our survey asked both children in the target sample and teachers to report on several related aspects of classroom environments, as well as on broader aspects of school quality. Below, we describe some of the findings from these reports.

Children's Perspectives

Table 25 shows student perceptions about teachers' attitudes toward students, tabulated by survey year and gender. Across these categories, a substantial majority of students agreed with statements that the teachers will

praise them for industriousness, that the teachers listen to them, that teachers care about students, and that teachers treat students fairly.

Table 25. Children's Views on Teachers by Gender in 2000 and 2004 (Percentages)

	2000			2004		
	Girls	Boys	chi2	Girls	Boys	chi2
If I study hard the teacher will praise me.	n=831	n=945	4.33 (3)	n=831	n=945	9.73 (3)*
Strongly Disagree	8.90	6.67		9.39	6.24	
Disagree Somewhat	10.47	11.53		25.75	25.50	
Agree Somewhat	44.16	46.88		47.53	53.12	
Strongly Agree	36.46	34.92		17.33	15.13	
Most teachers listen to me.	n=831	n=945	2.24 (3)	n=831	n=945	2.80 (3)
Strongly Disagree	10.83	12.70		13.96	12.17	
Disagree Somewhat	23.95	24.55		34.18	37.46	
Agree Somewhat	41.88	41.48		41.16	39.37	
Strongly Agree	23.35	21.27		10.71	11.01	
The teachers at my school care about the students.	n=831	n=945	3.93 (3)	n=831	n=945	4.18 (3)
Strongly Disagree	1.81	2.33		2.41	2.65	
Disagree Somewhat	4.33	5.61		8.42	10.48	
Agree Somewhat	36.58	38.84		52.83	54.39	
Strongly Agree	57.28	53.23		36.34	32.49	
Teachers at our school treat students fairly.	n=831	n=945	2.87 (3)	n=831	n=945	.90 (3)
Strongly Disagree	3.97	3.49		5.42	4.76	
Disagree Somewhat	9.87	8.15		16.73	15.77	
Agree Somewhat	47.05	50.37		47.89	48.15	
Strongly Agree	39.11	37.99		29.96	31.32	

Source: GSCF-1 and GSCF-2 Child and Household Questionnaires.

*=p<.05

The vast majority of students—about 90 percent of girls and boys in the 2000 and 2004 waves—felt that teachers cared about students. A small, but still substantial, majority felt that students were treated fairly by teachers. 86 percent of girls and 88 percent of boys in 2000 agreed that there was fair treatment; comparable figures were 78 and 79 percent in 2004. In 2004, roughly 82 percent

of children in school and 84 percent of children out of school felt that they were fairly treated.

Table 26. Children's Views on Schooling by Gender in 2000 and 2004 (Percentages)

	2000			2004		
	Girls	Boys	chi2	Girls	Boys	chi2
The teaching quality at my school is good.	n=831	n=945	1.76 (3)	n=831	n=945	1.93 (3)
Strongly Disagree	3.49	3.60		5.54	4.66	
Disagree Somewhat	12.15	10.26		19.98	19.68	
Agree Somewhat	43.68	45.50		48.13	51.01	
Strongly Agree	40.67	40.63		26.35	24.66	
Going to school is important for my future.	n=831	n=945	3.46 (3)	n=831	n=945	9.62 (3)*
Strongly Disagree	1.44	1.59		0.96	1.27	
Disagree Somewhat	5.17	3.92		1.68	4.13	
Agree Somewhat	32.37	29.84		33.45	31.96	
Strongly Agree	61.01	64.66		63.90	62.65	
We believe we can learn our lessons well.	n=831	n=945	10.15 (3) *	n=831	n=945	2.57 (3)
Strongly Disagree	3.25	1.27		1.32	2.01	
Disagree Somewhat	4.21	5.19		6.62	5.29	
Agree Somewhat	50.78	48.68		45.61	46.03	
Strongly Agree	41.76	44.87		46.45	46.67	
We are assigned a heavy homework load.	n=831	n=945	0.10 (3)	n=831	n=945	3.60 (3)
Strongly Disagree	10.47	10.26		11.67	9.95	
Disagree Somewhat	26.96	27.20		44.16	48.15	
Agree Somewhat	33.81	34.29		33.57	32.59	
Strongly Agree	28.76	28.25		10.59	9.31	
Schoolwork is easy for me.	n=831	n=945	3.00 (3)	n=831	n=945	.80 (3)
Strongly Disagree	12.15	11.43		12.15	10.90	
Disagree Somewhat	32.61	35.24		51.50	51.75	
Agree Somewhat	34.78	35.66		28.52	28.99	
Strongly Agree	20.46	17.67		7.82	8.36	
If I study hard, I can do well in my studies.	n=831	n=945	11.44 (3) *	n=831	n=945	3.05 (3)
Strongly Disagree	2.17	2.12		1.81	2.33	
Disagree Somewhat	5.42	2.43		8.06	6.88	
Agree Somewhat	39.83	39.15		42.00	45.19	
Strongly Agree	52.59	56.30		48.13	45.61	
I like to participate in group activities at school.	n=831	n=945	2.28 (3)	n=831	n=945	2.52 (3)
Strongly Disagree	3.49	2.33		4.57	3.28	
Disagree Somewhat	7.34	6.98		9.87	11.01	
Agree Somewhat	50.78	51.85		55.84	56.51	
Strongly Agree	38.39	38.84		29.72	29.21	

Source: GSCF-1 and GSCF-2 Child and Household Questionnaires.

*=p<.05

Table 26 shows a selection of children's answers to questions about schooling, more broadly. Most children believe that the teaching quality at their school is good. In 2000, 84 percent of girls and 86 percent of boys agreed or strongly agreed that teaching quality was good; in 2004, corresponding figures were 74 and 76 percent. An overwhelming majority of children, over 90 percent across the board, feel that education is important for their futures.

On day-to-day aspects of the school experience, we also asked a number of questions. More than 92 percent of students, across the board, agreed with the sentiment, "We believe that we can learn our lessons well." In 2000, 63 percent of girls and boys agreed that, "we are assigned a heavy homework load". In 2004, corresponding numbers were roughly 44 percent for girls and 42 for boys.

Just over half of children in 2000 and a little over a third in 2004 agreed or strongly agreed that schoolwork was easy. There is a high degree of agreement with the notion that studying pays off: under one in ten girls or boys in either year disagreed with the notion that "If I study hard, I can do well in my studies." The final item in Table 26 addresses whether students enjoy participating in group activities at school. Most students do. In 2000, 11 percent of girls and 9 percent of boys disagreed, somewhat or strongly, with this statement. In 2004, 14 percent of both groups did so.

Table 27. Children's Feelings about School by Gender in 2000 and 2004 (Percentages)

	2000			2004		
	Girls	Boys	chi2	Girls	Boys	chi2
I feel happy in school.	n=831	n=945	3.47(3)	n=831	n=945	1.46 (3)
Strongly Disagree	5.66	5.71		6.14	4.97	
Disagree Somewhat	10.71	11.64		15.64	16.83	
Agree Somewhat	48.74	51.85		55.23	55.24	
Strongly Agree	34.90	30.79		22.98	22.96	
I often do not want to go to school.	n=831	n=945	1.63 (3)	n=831	n=945	3.61 (3)
Strongly Disagree	49.70	48.04		47.53	45.29	
Disagree Somewhat	28.28	30.69		35.38	34.60	
Agree Somewhat	10.47	10.79		13.12	14.50	
Strongly Agree	11.55	10.48		3.97	5.61	
I often feel bored in school .	n=831	n=945	7.58 (3)	n=831	n=945	5.83 (3)
Strongly Disagree	31.17	25.40		32.97	31.64	
Disagree Somewhat	43.44	47.20		54.63	52.06	
Agree Somewhat	15.76	17.67		9.99	12.59	
Strongly Agree	9.63	9.74		2.41	3.70	
I often feel lonely in school.	n=831	n=945	2.50 (3)	n=831	n=945	5.98 (3)
Strongly Disagree	34.06	31.43		31.77	33.23	
Disagree Somewhat	39.35	40.85		50.54	48.15	
Agree Somewhat	16.49	15.87		13.84	12.49	
Strongly Agree	10.11	11.85		3.85	6.14	
I like to learn new things in school.	n=831	n=945	1.49 (3)	n=831	n=945	2.91 (3)
Strongly Disagree	5.42	4.76		4.21	2.75	
Disagree Somewhat	11.07	9.63		9.27	9.74	
Agree Somewhat	43.20	44.23		49.94	50.79	
Strongly Agree	40.31	41.38		36.58	36.72	

Source: GSCF-1 and GSCF-2 Child and Household Questionnaires.

*=p<.05

In Table 27, we present responses to questions about children’s feelings at school. In 2000, about 84 percent of girls and 83 percent of boys reported feeling happy at school; the number was 78 for both groups in 2004. About one in five enrolled students, and nearly one in four out-of-school children, reported disagreement with this statement.

Boredom remains an issue for primary school children. In 2000, about one-fourth of girls and boys agreed with the statement, "I often feel bored at school." Corresponding numbers in the year 2004 were 12 percent and 16 percent. Many children also reported feeling lonely at school. In 2000, about one quarter of girls and boys agreed with the statement "I often feel lonely at school." Less than one in five girls and boys agreed in 2004.

A final item in Table 27 regards whether children like learning new things at school. Fewer than one in five children in the full cohort disagreed with this statement in either year.

Table 28. Children's Views on Teaching Styles by Gender in 2000 and 2004 (Percentages)						
	2000			2004		
	Girls	Boys	chi2	Girls	Boys	chi2
The teacher often pays attention to me in class.	n=831	n=945	.11 (3)	n=831	n=945	10.90 (3)*
Strongly Disagree	10.59	10.37		10.59	6.77	
Disagree Somewhat	24.55	24.23		40.79	38.94	
Agree Somewhat	38.63	39.37		37.91	41.59	
Strongly Agree	26.23	26.03		10.71	12.70	
We usually discuss problems together in class animatedly.	n=831	n=945	3.82 (3)	n=831	n=945	1.46 (3)
Strongly Disagree	9.39	6.98		4.69	4.02	
Disagree Somewhat	18.17	18.62		21.42	19.79	
Agree Somewhat	43.80	46.24		51.74	52.70	
Strongly Agree	28.64	28.15		22.14	23.49	
In class the teacher lectures while we listen.	n=831	n=945	3.23 (3)	n=831	n=945	3.76 (3)
Strongly Disagree	6.38	4.87		8.30	6.98	
Disagree Somewhat	15.16	13.65		33.21	35.45	
Agree Somewhat	38.27	40.74		42.12	43.70	
Strongly Agree	40.19	40.74		16.37	13.86	
The teacher encourages me to ask questions.	n=831	n=945	3.44 (3)	n=831	n=945	5.66 (3)
Strongly Disagree	3.97	2.43		1.56	2.86	
Disagree Somewhat	7.58	7.83		6.50	7.41	
Agree Somewhat	44.16	44.55		50.78	52.38	
Strongly Agree	44.28	45.19		41.16	37.35	

Source: GSCF-1 and GSCF-2 Child and Household Questionnaires.

*=p<.05

Our last table on children's perspectives on schooling addresses children's perceptions of teaching styles in the classroom. The first question asks students to rate agreement with the statement "The teacher often pays attention to me in class." More than a third of children disagreed with this statement in 2000 and just about half did so in 2004.

We asked a number of questions related to the progressive teaching styles encouraged in the recent curriculum reforms. About three-fourths of girls and boys in both years agreed with the sentiment, "We usually discuss problems

together in class animatedly". Additionally, we see a substantial drop in the perception of lecturing as a teaching style by children in the sample between 2000 and 2004. In 2000, about 78 percent of girls and 81 percent of boys agreed with the statement, "In class, the teacher lectures, while we listen." In 2004, comparable percentages were 58 percent for both girls and boys. We do not test this difference statistically here, but speculate that such a difference could be linked plausibly to changing practices over time, or changing practices by school level.

Teachers' Perspectives

In 2004, we also asked teachers in our sample a number of questions about their practices in the classroom. Their responses are probably best interpreted as a combination of what they *believe* that they are doing in the classroom, and what they believe that they *should* be doing in the classroom. Most of these items pertained to the use of traditional versus "new curriculum" teaching practices. Responses to a selection of these items are reported in Table 29, and attest to the reported use of both kinds of practices. Teachers report use of a number of traditional teaching techniques. Among primary school teachers, about 42 percent said that they frequently drill, and the number was similar—40 percent—for junior high school teachers. About 53 percent of primary school teachers and 59 percent of junior high school teachers reported frequent lecturing.

About 42 percent of primary school teachers and 37 percent of junior high school teachers reported frequently asking students to find answers in their textbooks.

One interesting exception is memorization. Just four percent of primary or junior high school teachers reported frequent use of memorization; about 37 percent of primary school teachers and 30 percent of junior high school teachers actually say they never use this technique.

Table 29. Teacher Self-Reports of Teaching Techniques by School Level in 2004 (Percentages)

	Never	Sometimes	Frequently
Drill			
Primary School Teachers (n=1018)	3.93	53.83	42.24
Junior High School Teachers (n=1332)	2.70	57.21	40.09
Ask Students Open-Ended Questions			
Primary School Teachers (n=1018)	1.87	46.56	51.57
Junior High School Teachers (n=1332)	1.28	53.90	44.82
Include Classroom Discussions			
Primary School Teachers (n=1018)	0.39	23.48	76.13
Junior High School Teachers (n=1332)	0.30	32.36	67.34
Facilitate Small Group Activities			
Primary School Teachers (n=1018)	1.77	38.61	59.63
Junior High School Teachers (n=1332)	1.73	47.45	50.83
Student Choral Response			
Primary School Teachers (n=1018)	3.14	63.65	33.20
Junior High School Teachers (n=1332)	2.85	60.21	36.94
Encourages Individual Student Response			
Primary School Teachers (n=1018)	0.59	25.44	73.97
Junior High School Teachers (n=1332)	0.38	29.05	70.57
Lectures			
Primary School Teachers (n=1018)	1.77	45.68	52.55
Junior High School Teachers (n=1332)	1.43	39.26	59.31
Memorization			
Primary School Teachers (n=1018)	36.84	59.04	4.13
Junior High School Teachers (n=1332)	29.73	65.84	4.43
Inquiry Learning			
Primary School Teachers (n=1018)	4.03	58.55	37.43
Junior High School Teachers (n=1332)	3.75	63.06	33.18
Ask Students to Find Answers in the Textbook			
Primary School Teachers (n=1018)	8.25	49.71	42.04
Junior High School Teachers (n=1332)	5.71	57.36	36.94
Ask Students to Participate in Activities that Require the Connection of Theory and Practice			
Primary School Teachers (n=1018)	2.06	59.43	38.51
Junior High School Teachers (n=1332)	3.00	60.74	36.26

Source: GSCF-2 Teacher Questionnaire.

Considering “new curriculum” techniques, about half of primary and junior high school teachers said that they frequently ask open-ended questions. Three-quarters of primary school teachers and two-thirds of junior high school teachers said that they include classroom discussion in their practice. Well over one-half of primary teachers, and about half of junior high school teachers, said that they frequently facilitate small-group activities. Just about a third of both groups reported frequent use of student choral response (students responding to questions in unison). About three-quarters of primary and junior high school teachers reported encouraging individual student responses. About one-third of primary and junior high school teachers reported use of inquiry learning.

SCHOOL PERSISTENCE: BARRIERS AND SUPPORTS

We turn now to part two of the report, which consists of an analysis of barriers and supports to school persistence. We begin by showing that the desired levels of education, as expressed in children's stated preferences, are extremely high. Table 30 shows children's educational aspirations for children in the years 2000 and 2004. The results are tabulated by sex,. In 2000, about half of children (46 percent of girls and 51 percent of boys) aspired to a college education. In 2004, children aspiring to tertiary level schooling had risen to 62 percent for girls and 64 percent for boys. What are the barriers that keep these

high aspirations from being realized? Educational bottlenecks at the upper secondary level are a serious problem (Wang 2006). However, here, we consider the barriers that face children of an age to be in primary and lower secondary education—stages of education that the government seeks to universalize as compulsory.

Table 30. Children's Educational Aspirations by Gender in 2000 and 2004 (Percentages)

	2000			2004		
	Girls	Boys	chi2	Girls	Boys	chi2
What is the highest level of schooling you want to complete?	n=831	n=945	13.42 (5)*	n=831	n=945	15.73 (5)*
Primary School	5.42	3.39		2.41	0.63	
Junior High School	9.99	8.89		6.98	7.94	
Senior High School	19.13	15.13		15.16	14.92	
Junior Trade School	9.99	10.16		4.57	2.65	
Senior Trade School	9.03	11.53		8.78	10.16	
University or Higher	46.45	50.90		62.09	63.70	

Source: GSCF-1 and GSCF-2 Child and Household Questionnaires.

*=p<.05

Informant Reports on Reasons for School-Leaving

We begin by looking at reports of reasons for non-enrollment in Gansu villages, as reflected in village leaders' reports of the contributors to school-leaving in the local village (Table 31). This question was asked in both 2000 and 2004, separately for primary and junior high school levels of education. For each item, we asked the village leader to state whether or not that item was a contributor to school leaving. The percentage refers to the percent of leaders who reported that each item contributed to school leaving.

Table 31. Village Leaders' Assessment of Factors Contributing to School Leaving in Sampled Gansu Villages (% responding that the item is a factor in school-leaving).

	Primary		Junior High School	
	2000	2004	2000	2004
Poor school quality	7	2	6	8
School too distant	8	5	17	12
School is over-subscribed	3	0	3	5
Tuition/costs too high	41	11	53	49
Parents unwilling to send children to school	15	4	10	16
Family needs labor at home	10	6	23	25
<i>Child does not want to go to school</i>	<i>11</i>	<i>19</i>	<i>27</i>	<i>56</i>
<i>Child's grades are poor</i>	<i>14</i>	<i>18</i>	<i>41</i>	<i>65</i>
Total Number of Villages=100				

Source: GSCF-1 and GSCF-2 Village Leader Questionnaires.

Table 31 shows that in the year 2000, 41 of the 100 village leaders stated that primary tuition being too high was a contributor to school leaving; 15 felt that parental unwillingness to send children to school was a problem; 14 believed that low grades was a problem; 11 percent felt that child's own unwillingness to attend school; and 10 felt that parental labor needs were a problem. By 2004, tuition was cited as a problem by only 11 village leaders, parental unwillingness was cited by only 4 leaders, and parental labor needs, by only 6. However, child-related factors were mentioned more in the latter year: 19 leaders cited children not wanting to attend school and 18 percent cited poor grades.

At the junior high school level, school supply issues were still perceived as concerning by a minority of village leaders. Distance was cited by 17 village leaders in 2000 and 12 leaders in 2004, and quality was cited by 6 leaders in 2000

and 8 leaders in 2004. Over-enrollment was reported by only 3 villages in 2000 and 5 in 2004. The significance of household economic constraints is clear at the junior high school level: 53 percent of leaders cited tuition in 2000 and 49 percent cited it in 2004 as a reason for non-enrollment. After tuition, parental need for labor was reported by about one-fourth of leaders, and parental unwillingness to send children to school by 10 leaders in 2000 and 16 in 2004. However, village leader reports are also consistent with an important, and possibly even rising, role of children's own preferences and performance. In the year 2000, more than a fourth of leaders reported children not wanting to attend school as a problem; by the year 2004, this was perceived as an issue by more than half of village leaders. In 2000, 41 percent of leaders reported children's poor grades as a reason for leaving school; by 2004, 65 percent of leaders reported this issue as a contributing factor to non-enrollment.

These findings suggest that even as economic considerations remain crucial, children's own contributions to the schooling decisions are perceived as being important, and perhaps increasingly so. Significantly, reports by household heads, mothers and children themselves are consistent with notions about the dual contributions of family economy and children themselves to decisions about schooling. Figure 3 shows the distribution of household head reports of the main reason that the child is not in school for households of sample

children who are not in school. The modal category was child's unwillingness to attend school (40 percent of heads), followed by financial difficulty (32 percent of heads) and poor school performance (11 percent of heads).

Figure 3. Percent Distribution of Household Head Reports of Primary Reason for School Leaving by Target Child, 2004 (N=255)

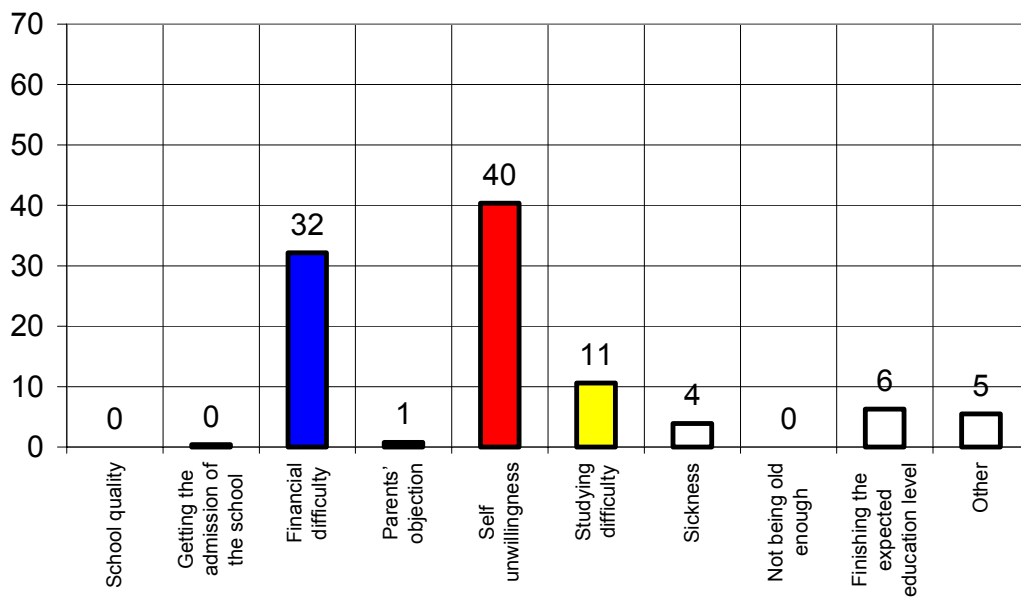


Figure 4. Out-of-School Children's Mother's Reports of Factors Contributing to School Leaving, 2004 (% responding that the item is a factor, N=218)

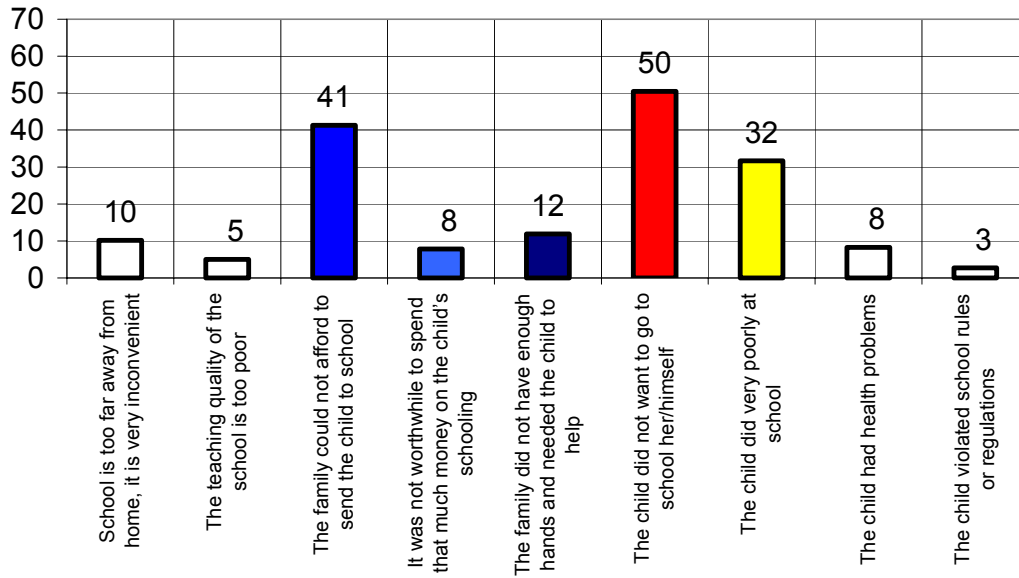
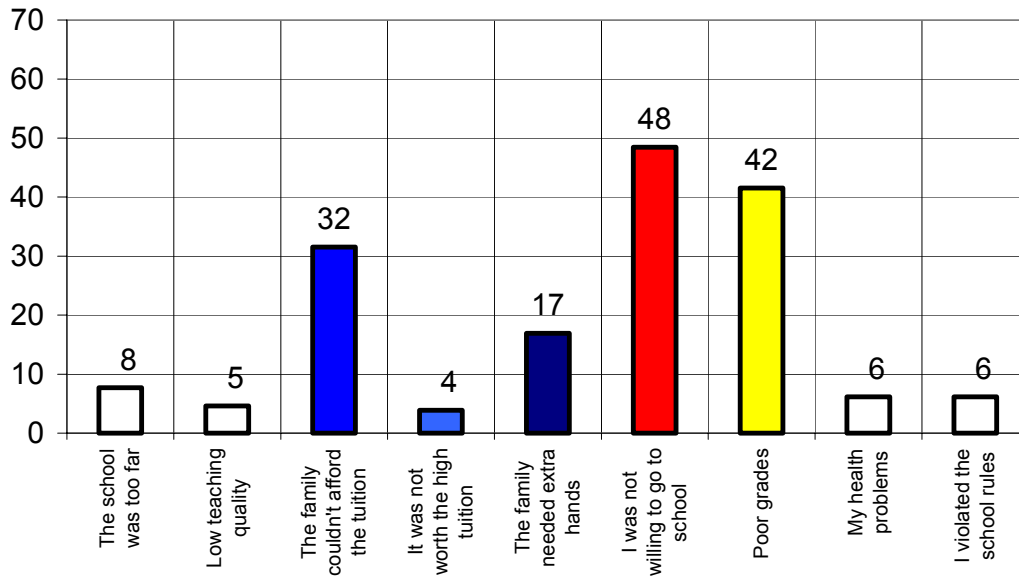


Figure 5. Out-of-School Children's Reports of Factors Contributing to School Leaving, 2004 (% responding that the item is a factor, N=130)



We asked mothers of non-enrolled children a different question, about whether or not each of a series of factors contributes to non-enrollment (see Figures 4 and 5). Among mothers, half reported child unwillingness and one-third reported children's poor achievement as factors in school non-enrollment. Family inability to afford school costs was cited by 41 percent of mothers; needing child labor at home, by 12 percent of mothers, and school not being worth the tuition, by 8 percent. School quality and school distance were cited by 5 and 10 percent of mothers, respectively.

Among non-enrolled children who were available to complete the child questionnaire, nearly half, 48 percent, report unwillingness to attend school, while 42 percent report poor grades as a contributor to non-enrollment. The household economy explanations are also important here: 32 percent of children reported that their families could not afford tuition, and 17 percent reported that the family needed extra hands at home. Few children reported school quality or distance as barriers.

Overall, these descriptive reports show that village leaders, families, and children themselves perceive that both family economic considerations and children's feelings about schooling and performance are important contributors to schooling decisions. Using these reports as a guide, we first consider factors

that predict performance and engagement with schooling. We then consider whether performance and engagement, along with household socio-economic status and other factors measured in 2000, can predict subsequent school outcomes.

Analysis of Outcomes in 2004

We now turn to an analysis of factors that predict school continuation, and those that predict school discontinuation. While there are many ways to approach these questions, we focus on three issues: First, to what extent are there socioeconomic and gender differences in school continuation? Second, can attributes of schools and teachers in 2000 be linked to school continuation in 2004? Finally, we consider whether school engagement and performance in 2000 can be linked to subsequent school continuation, as reasons for school-leaving presented in Table 31 and Figures 1 to 3 would suggest.

Strategy

We model the following outcome variables:⁵

Attainment Change. Regardless of a child's enrollment status in 2000 or 2004, we calculated a difference measure of the change in highest attainment reported by the household head between 2000 and 2004.

Enrollment Status. We report *enrollment status* as marked in the household questionnaire. This variable combines reported enrollment status for children at home and children not living at home.

Attainment of Nine Years of Education. Regardless of a child's enrollment status, we also consider whether or not the child has achieved the nine-year target for compulsory education. We restrict analyses of this outcome to children who were 12 in 2000, and thus old enough to have completed nine years if attending and moving up the grades in a timely manner.

We model these outcomes in the year 2004 with the following child socio-demographic characteristics, school characteristics, and teacher characteristics measured in the earlier 2000 survey:

⁵We estimate random intercepts models, with random effects at the level of school and teacher. For continuous outcomes (change in attainment, and for the 2000 analyses, aspirations, academic confidence, industriousness, and math and language grades), we use the STATA procedure XTMIXED. For binary outcomes (enrollment or nine-year achievement), we use the GLLAMM procedure.

Child Socio-Demographic Characteristics. Human capital of parents and the material resources in the household lend themselves fairly easily to measurement in terms of parents' education and family wealth. Here, we use *mother's* and *father's years of education* as indicators of human capital. *Wealth* (logged) is used as a measure of family material resources. Family wealth was constructed from detailed measures of household assets, including the value of housing, fixed capital, and household durable goods.

Because gender has historically played an important role in conditioning educational opportunity in rural China, we include an indicator for child *gender* in all models. Because siblings are commonly perceived to "dilute" family resources—economic, social, or cultural—we also control for number of *siblings*. Because there may be developmental changes in children's attitude reporting and because older children are less likely to be in school, we include *age* as a control variable.

School Characteristics. The school characteristics that we include are those reported by the principal. They include school *type*, whether public or other, whether the school has *boarders*,⁶ *teacher absenteeism* (whether the typical teacher

⁶ Very few primary schools had boarding students. We include this variable due to its substantive interest, but we are cautious in interpretation due to small sample size.

was absent four or more times per semester), teacher *average monthly salary* (logged), the presence of *daike* teachers or *minban* teachers, the principal's gender (*female principal*) and *experience teaching* and *experience as a principal*.

Teacher Characteristics. Analyses include the log of teacher's *monthly income* (logged), including salary and bonuses. We include teacher *gender* in all analyses, as teacher gender is often cited as a salient factor in perceived quality of education in developing countries. We include teacher's status as a *formal, credentialed teacher, years of experience, teachers' lower secondary, upper secondary or tertiary educational attainment*,⁷ and whether or not the teacher is *local*, meaning from the village.

In addition, we are interested in knowing how a student's engagement and performance matter or do not matter for subsequent persistence. We use the following measures:

⁷ High school level education includes those who graduate from regular high school or from a specialized teacher training school attended after middle school (*zhongzhuan*, 中专). College-level education includes those that graduate from regular universities (very few) or from a normal college (*dazhuan*, 大专) following the completion of high school. There are some teachers who take correspondence courses to receive accreditation for *dazhuan* without ever having completed high school. Because of the design of the survey instrument, we have difficulty distinguishing these cases from teachers who receive *zhongzhuan* degrees, and so they are categorized as having high school-level education. Thus "tertiary" is equal to one only when the teacher completes both high school and college-level schooling, and "upper secondary" captures all other educational outcomes except those teachers who hold only a middle school degree.

Engagement. We define four dimensions of engagement, each based on child's self-report: *educational aspirations, academic confidence, industriousness, and alienation* from school. *Aspirations* were converted from levels shown in Appendix 2 to years corresponding to the completion of those levels. *Academic confidence, industriousness, and alienation* were generated by standardizing the component variables shown in Appendix 2, summing them, and dividing by the number of components.

Performance. Our measures of performance are last semester's average *math and language* grades, reported by teachers (reported as scores).

Change-In-Attainment Results

Table 32. Mixed Models of Change in Attainment with Child, Teacher, and School Characteristics

	Change in Attainment, 2000-2004			
	(1) Demo- graphics	(2) (1) + School Char.s	(3) (1)+Teache r Char.s	(4) (1)+School + Teacher Char.s
Female	-0.072	-0.071	-0.074	-0.074
Wealth	0.109***	0.110***	0.104***	0.108***
Father's education (years)	0.023**	0.021**	0.022**	0.021**
Mother's education (years)	0.006	0.006	0.005	0.006
Siblings	0.031	0.031	0.038	0.035
Age	-0.052*	-0.046*	-0.050*	-0.043*
Teacher monthly income		0.056	0.052	0.079
School type=other (ref.=public)		0.217		0.227
School has boarders		-0.26		-0.208
Typical teacher absent 4+times per semester		-0.300*		-0.308*
Teacher average monthly salary		0.01		-0.006
School has daike teachers		0.021		0.029
School has minban teachers		-0.083		-0.07
Female principal		-0.268		-0.281
Principal experience (years teaching)		0.003		0.003
Principal experience (years as principal)		0.003		0.002
Female teacher			0.076	0.071
Formal teacher			0.032	0.052
Teacher experience (years)			0.003	0.002
Teacher education=upper secondary			0.125	0.117
Teacher education=tertiary			0.056	0.05
Local teacher			0.02	0.006
Constant	3.216***	2.717**	2.726***	2.454*
Random effects parameters				
SD (Constant--Teacher)	-1.507***	-1.601***	-1.529***	-1.585***
SD (Constant--School)	-1.229***	-1.234***	-1.210***	-1.221***
SD (Residual)	-0.115***	-0.115***	-0.115***	-0.116***

Notes: N=1693. * p<0.05; ** p<0.01; *** p<0.001

Change-in-attainment results are presented in Table 32. We show four specifications: (1) a model with only child background characteristics; (2) a model with child background and school characteristics; (3) a model with child

background and teacher characteristics; and (4) a model with child background, school, and teacher characteristics. In these specifications, it is clear that socioeconomic status matters: regardless of whether school and teacher characteristics are accounted for, logged wealth and father's education are significant predictors of children's grade advancement between the surveys. A standard deviation increase in the logged wealth measure is associated with about a tenth of a year more attainment, and a standard deviation increase in father's years of education, with about .08 years more attainment. The scope of the effect is similar in the models with or without school and teacher measures, indicating that these factors do not explain socioeconomic effects on change in attainment. Perhaps more surprising than the presence of socioeconomic differences is the absence of gender differences: gender is not statistically significant in these models. Among school and teacher measures, the only statistically significant finding is that teacher absenteeism in 2000 is associated with slower advancement between 2000 and 2004.

Enrollment Results

Table 33. GLLAMM Models of Continued Enrollment and Nine-Year Achievement with Child, Teacher, and School Characteristics

	Enrollment, 2004				Nine-Year Achievement, 2004			
	(1) Demo- graphics	(2) (1) + School Char.s	(3) (1)+Teacher Char.s	(4) (1)+School + Teacher Char.s	(1) Demo-graphics	(2) (1) + School Char.s	(3) (1)+Teacher Char.s	(4) (1)+School + Teacher Char.s
Female	-0.397*	-0.419*	-0.391*	-0.414*	- 0.39	- 0.416	- 0.379	- 0.402
Wealth	0.323**	0.344***	0.328**	0.339***	0.597**	0.481*	0.457*	0.416*
Father's education (years)	0.062*	0.065*	0.060*	0.062*	0.045	0.038	0.052	0.045
Mother's education (years)	0.049	0.056*	0.049	0.056*	0.100*	0.095*	0.098*	0.099*
Siblings	0.075	0.069	0.074	0.08	0.022	0.101	0.165	0.18
Age	-0.955***	-0.951***	-0.937***	-0.941***	0.739*	0.678*	0.735*	0.678*
Teacher monthly income			- 0.175	- 0.037			2.065***	1.452*
School type=other (ref.=public)		0.055		0.083		- 0.209		0.131
School has boarders		- 0.21		0.027		2.296*		1.605
Typical teacher absent 4+times per semester		0.17		0.11		- 0.142		- 0.388
Teacher average monthly salary		- 0.016		- 0.045		1.171		1.121
School has daike teachers		0.087		0.183		- 0.33		- 0.186
School has minban teachers		0.353		0.435		-2.201***		-2.015***
Female principal		0.65		0.67		- 0.21		0.765
Principal experience (years teaching)		- 0.005		- 0.005		0.02		0.027
Principal experience (years as principal)		- 0.011		- 0.012		- 0.045		- 0.049
Female teacher			0.056	0.107			- 0.471	- 0.577
Formal teacher			- 0.354	- 0.27			1.467	0.927
Teacher experience (years)			0.006	0.006			-0.085**	-0.074*
Teacher education=upper secondary			0.373	0.417			- 0.275	- 0.301
Teacher education=tertiary			- 0.022	0.034			0.292	0.129
Local teacher			- 0.075	- 0.094			- 0.262	- 0.1
Constant	9.604***	9.469**	10.528***	9.698**	-15.268***	-20.125*	-26.962***	-28.194**
Random effects parameters								
SD (Constant--Teacher)	0.478	0.518	0.359	0.425	2.600***	2.527***	2.665***	2.578***
SD (Constant--School)	0.601***	0.542**	0.610***	0.543**	0.43	0.	0.	0.
SD (Residual)								

Notes: Enrollment Models: N=1693. Nine-Year Attainment Models: N=629. * p<0.05; ** p<0.01; *** p<0.001

The same set of specifications are presented in Table 33 for the enrollment outcome. Here again, in each model specification, a family's wealth and paternal education matter for continued enrollment (maternal education matters except in specification 3). One standard deviation increase in logged wealth translates to roughly a 35 percent increase in odds of enrollment, depending on specification. A year more of fathers' or mothers' education translates to about a 6 percent increase in odds of enrollment (though the mother's education effect is not always significant at conventional levels). In enrollment, gender differences are significant. Girls' odds of enrollment are about a third lower than boys'. These statements are true whether or not account is taken of earlier school and teacher

characteristics, and none of the school or teacher characteristics matter. School and teacher effects are not significant in the enrollment models.

Nine-Year Achievement Results

Our models of nine-year achievement are presented in Table 33 and use the same four specifications as for the earlier outcomes of change in attainment and enrollment, but again, for an age-restricted sample. Considering the outcome of whether or not children have achieved nine years of schooling, wealth and mother's education matter. Gender shows no significant effect. For this outcome, some teacher and school characteristics mattered: Children with better paid teachers were more likely to complete nine years, while children in schools with *minban* teachers were much less likely to have completed nine years. Anomalously, teacher experience is negatively associated with student nine-year achievement, and, before taking into account teacher factors, schools with boarders are positively associated.

Engagement and Performance as Predictors of Persistence

Table 34. Models of Attainment Change, Enrollment and Nine-Year Completion with Achievement and Engagement

2000 Measures	2004 Outcomes								
	Change in Attainment			Enrollment			Nine Years		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	Engagement	(1) + Performance	(2) + Child, Teacher and School Char.s	Engagement	(1) + Performance	(2) + Child, Teacher and School Char.s	Engagement	(1) + Performance	(2) + Child, Teacher and School Char.s
Aspirations	0.025**	0.019*	0.018*	0.122***	0.115***	0.111***	0.187***	0.172**	0.140*
Academic self confidence	0.193***	0.120***	0.112**	0.219	0.092	- 0.026	0.435	0.098	0.259
Industriousness	0.003	- 0.005	0.000	- 0.095	- 0.108	0.021	- 0.066	- 0.066	0.102
Alienation	-0.088**	- 0.059	- 0.054	0.018	0.075	0.037	-0.549*	- 0.377	- 0.270
Math score		0.010***	0.009**		0.020*	0.021*		0.019	0.009
Lang score		0.006	0.006		0.005	0.000		0.045	0.048*
Female			- 0.086			-0.391*			- 0.420
Wealth			0.080**			0.288**			0.355
Father's education (years)			0.013			0.059*			0.044
Mother's education (years)			0.000			0.045			0.098*
Siblings			0.042			0.047			0.124
Female teacher			0.052			0.107			- 0.668
Formal teacher			0.034			- 0.327			0.664
Teacher experience (years)			0.003			0.013			- 0.050
Teacher education=upper secondary			0.080			0.382			- 0.365
Teacher education=tertiary			0.009			- 0.016			- 0.172
Local teacher			- 0.047			- 0.278			- 0.234
Teacher monthly income			0.052			- 0.096			1.182*
School type=other (ref.=public)			0.227			0.054			0.200
School has boarders			- 0.285			- 0.356			2.185
Typical teacher absent 4+times per semester			- 0.244			0.292			- 0.310
Teacher average monthly salary			- 0.015			0.017			1.022
School has daike teachers			0.040			0.204			- 0.268
School has minban teachers			- 0.023			0.585*			-1.849***
Female principal			- 0.282			0.623			0.331
Principal experience (years teaching)			0.003			- 0.003			0.043
Principal experience (years as principal)			0.001			- 0.014			- 0.049
Age			- 0.034			-0.968***			0.889**
Constant	3.519***	2.447***	1.634	0.745*	- 0.981	7.687*	-2.484***	-6.915***	-34.048***
Random effects parameters									
SD (Constant-Teacher)	-1.513***	-1.456***	-1.560***	0.924***	0.974***	0.688**	2.598***	2.713***	2.299***
SD (Constant-School)	-1.106***	-1.082***	-1.117***	0.475*	0.484*	0.407	0.923*	0.624	0.000
SD (Residual)	-0.145***	-0.171***	-0.172***						

Notes: Enrollment Models: N=1693. Nine-Year Attainment Models: N=629. * p<0.05; ** p<0.01; *** p<0.001

Do indicators of engagement and performance matter? Table 34 shows engagement and performance effects on the three outcomes—change in attainment, continued enrollment, and nine-year attainment. For each outcome, we show engagement and performance coefficients for three specifications. The first specification includes engagement measures only; the second adds performance measures and the third adds controls for all child, teacher and school variables shown in the full models (specifications marked (4)) in Tables 32 and 33. The point of these tables is to illuminate whether these measures of early engagement are predictive of subsequent outcomes, net of other factors thought

to matter. The table shows that early aspirations significantly predict favorable outcomes across all specifications and all outcomes. Math or language achievement is a significant predictor of each outcome in the full model specification.

Summary

Our models of family, teacher, and school effects on outcomes show that better-off children are more likely to show grade attainment, continued enrollment, and attainment of nine years of basic education. In contrast, the gender story is mixed: girls are less likely to be enrolled, but have not gained fewer grades, nor are they less likely to achieve nine years of education. This finding suggests that boys may start later or repeat more. It is possible that boys are more likely to be encouraged to repeat a grade to complete it successfully, or to increase high school exam scores.

One significant finding is that the introduction of school and teacher effects, by and large, does not explain away the advantages of children in better-off families. School and teacher effects do not consistently matter across the three outcomes. Some interesting findings include that teacher absenteeism in 2000 is associated with less attainment between 2000 and 2004; children with better-paid home room teachers are more likely to attain nine years of school; and children in schools with *minban* teachers are less likely to attain nine years.

However, there is not a consistent story of school characteristics that help or hinder children's persistence.

Reports by village-leaders, fathers, mothers, and children themselves, suggest that children's performance and engagement, along with economic considerations, are important contributors to school-leaving in Gansu's rural villages. We do not yet know how to measure engagement well. However, models presented in this section suggest that overall and net of many school and teacher characteristics, aspirations and performance, along with socioeconomic status, are significant determinants of continuation in school.⁸

Determinants of Engagement and Performance

Given that children's performance and preferences are highlighted as potentially important dimensions of enrollment decisions, along with economic factors, we next turn to an analysis of factors associated with favorable attitudes toward education and high grades. We consider aspirations and math and language scores (grades), as these are suggested by our analyses as being predictive of subsequent outcomes. However, we also consider the academic confidence, industriousness, and alienation measures. These measures may be

⁸ The wealth effect on nine-year attainment dissipates with the inclusion of aspirations and performance in the model, suggesting the links among these characteristics.

considered indicative of a desirable classroom environment, regardless of whether they predict subsequent school continuation.

Strategy

Tables 35, 36, and 37 report estimates from models predicting aspirations and academic confidence (Table 35), industriousness and alienation (Table 36), and math and language grades (Table 37). For each outcome, we consider four different specifications. For each outcome, model (1) regresses measures on child characteristics only; model (2) adds school characteristics only; model (3) adds teacher characteristics only; and model (4) adds school and teacher characteristics.

Engagement Results

Table 35. Mixed Models of Aspirations and Confidence with Child, Teacher, and School Characteristics

Predictor	Aspirations (Years)				Academic Confidence			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
	Demo-graphics	(1) + School Char.s	(1)+Teacher Char.s	(1)+School + Teacher Char.s	Demo-graphics	(1) + School Char.s	(1)+Teacher Char.s	(1)+School + Teacher Char.s
Female	-0.349*	-0.354*	-0.368*	-0.367*	0.039	0.039	0.039	0.039
Wealth	0.151	0.163	0.154	0.157	-0.026	-0.027	-0.025	-0.026
Father's education (years)	0.046	0.045	0.047*	0.046*	0.021***	0.021***	0.020***	0.021***
Mother's education (years)	0.023	0.027	0.023	0.027	-0.005	-0.004	-0.004	-0.004
Siblings	-0.233*	-0.264*	-0.257*	-0.269*	0.027	0.026	0.025	0.023
Teacher monthly income		-0.215	-0.235	-0.161		0.022	-0.006	0.025
School type=other (ref.=public)		0.507		0.629		-0.015		-0.021
School has boarders		2.008**		1.896**		0.102		0.126
Typical teacher absent 4+times per semester		-0.566		-0.521		-0.271**		-0.269**
Teacher average monthly salary		-0.297		-0.281		-0.14		-0.137
School has daike teachers		0.208		0.2		-0.078		-0.075
School has minban teachers		0.08		0.19		0.023		0.03
Female principal		-0.153		-0.185		0.121		0.127
Principal experience (years teaching)		-0.011		-0.01		-0.003		-0.002
Principal experience (years as principal)		0.005		0.002		0.007		0.007
Female teacher			0.434*	0.493*			0.077	0.076
Formal teacher			-0.247	-0.233			-0.053	-0.01
Teacher experience (years)			-0.011	-0.009			0.002	0.002
Teacher education=upper secondary			-0.178	-0.124			0.024	0.02
Teacher education=tertiary			0.244	0.248			0.014	0.003
Local teacher			0.438*	0.393			0.101*	0.102*
Constant (Dummies for grades not shown)	11.041***	14.076***	12.629***	13.838***	0.034	0.856	-0.003	0.685
Random effects parameters								
SD (Constant-Teacher)	0.003	0.011	-0.056	-0.027	-2.067***	-2.113***	-2.082***	-2.161***
SD (Constant-School)	-0.31	-0.324	-0.308	-0.336	-1.887***	-1.921***	-1.890***	-1.928***
SD (Residual)	1.056***	1.054***	1.055***	1.054***	-0.333***	-0.334***	-0.333***	-0.333***

Notes: N=1693. * p<0.05; ** p<0.01; *** p<0.001

Turning to the engagement measures, we begin with a discussion of child's aspirations. Here, we see that girls, children of less educated fathers (in specifications 3 and 4), and children with more siblings have lower aspirations, across the board. The few children in schools with boarders have higher aspirations, and children with female and local teachers have higher aspirations (results are significant or marginal, depending on specification). Turning to academic confidence, father's education is the main child factor that matters.

Teacher absence is associated with less confidence, and local teachers, with greater confidence.

Table 36. Mixed Models of Industriousness and Alienation with Child, Teacher, and School Characteristics

Predictor	Industriousness Scale				Alienation Scale			
	(1) Demo- graphics	(2) (1) + School Char.s	(3) (1)+Teacher Char.s	(4) (1)+School + Teacher Char.s	(1) Demo- graphics	(2) (1) + School Char.s	(3) (1)+Teacher Char.s	(4) (1)+School + Teacher Char.s
Female	0.139***	0.139***	0.137**	0.139**	-0.081*	-0.080*	-0.077*	-0.076*
Wealth	-0.016	-0.012	-0.012	-0.012	-0.025	-0.024	-0.021	-0.022
Father's education (years)	0.01	0.01	0.01	0.01	-0.004	-0.003	-0.003	-0.003
Mother's education (years)	-0.011	-0.011	-0.011	-0.01	-0.007	-0.006	-0.006	-0.006
Siblings	0.042	0.034	0.038	0.036	0.041	0.036	0.033	0.03
Teacher monthly income		-0.031	-0.039	-0.015		-0.023	-0.053	-0.041
School type=other (ref.=public)		-0.064		-0.085		0.082		0.063
School has boarders		0.162		0.187		0.295		0.251
Typical teacher absent 4+times per semester		-0.347**		-0.350**		0.016		0.024
Teacher average monthly salary		-0.224		-0.228		-0.162		-0.146
School has daike teachers		0.029		0.029		-0.135*		-0.149*
School has minban teachers		-0.012		-0.018		0.034		0.014
Female principal		-0.095		-0.082		0.084		0.092
Principal experience (years teaching)		-0.003		-0.003		0		0
Principal experience (years as principal)		0.004		0.004		-0.001		0
Female teacher			0.003	0.007			-0.078	-0.078
Formal teacher			0.043	0.07			-0.051	-0.016
Teacher experience (years)			0.003	0.003			0	0
Teacher education=upper secondary			0.051	0.055			-0.146**	-0.146**
Teacher education=tertiary			0.033	0.022			-0.054	-0.051
Local teacher			0.066	0.055			-0.008	-0.006
Constant (Dummies for grades not shown)	-0.271	1.352	-0.254	1.057	0.513*	1.708*	0.976	1.860*
Random effects parameters								
SD (Constant--Teacher)	-1.529***	-1.555***	-1.567***	-1.584***	-1.516***	-1.586***	-1.533***	-1.598***
SD (Constant--School)	-1.967***	-1.998***	-1.863***	-1.913***	-1.519***	-1.513***	-1.537***	-1.533***
SD (Residual)	-0.199***	-0.199***	-0.201***	-0.200***	-0.424***	-0.422***	-0.424***	-0.422***

Notes: N=1693. * p<0.05; ** p<0.01; *** p<0.001

Looking at industriousness in Table 36, only two predictors matter: gender and teacher absence. Girls score higher on this scale, and children in schools with teacher absenteeism score lower. In addition, for alienation in the same table, gender matters: girls are less alienated, on average. The other significant predictors of alienation are having better-educated teachers and whether or not the school has *daike* teachers. Students in schools with these teachers report less alienation.

Performance Results

Table 37. Mixed Models of Math and Language Grades with Child, Teacher, and School Characteristics

Predictor	Average Math Score (Grade)				Average Language Score (Grade)			
	(1) Demo- graphics	(2) (1) + School Char.s	(3) (1) + Teacher Char.s	(4) (1) + School + Teacher Char.s	(1) Demo- graphics	(2) (1) + School Char.s	(3) (1) + Teacher Char.s	(4) (1) + School + Teacher Char.s
Female	0.635	0.576	0.497	0.455	2.224***	2.194***	2.126***	2.109***
Wealth	0.691	0.582	0.577	0.511	0.877*	0.812*	0.853*	0.803*
Father's education (years)	0.308**	0.307**	0.310**	0.309**	0.274**	0.277**	0.275**	0.279**
Mother's education (years)	0.315**	0.300**	0.302**	0.293*	0.330**	0.316**	0.331**	0.316**
Siblings	-0.407	-0.324	-0.258	-0.228	-0.111	-0.061	-0.071	-0.055
School type=other (ref.=public)		-0.402		0.004		-1.333		-1.439
School has boarders		0.392		0.019		-2.425		-2.536
Typical teacher absent 4+times per semester		-2.669		-2.534		0.78		1.004
Teacher average monthly salary		1.133		0.058		-0.61		-0.902
School has daike teachers		-1.106		-1.446		-0.563		-0.879
School has minban teachers		-2.138		-1.955		-2.158		-2.286
Female principal		-3.438		-2.643		-6.181		-5.815
Principal experience (years teaching)		-0.121		-0.123		-0.159		-0.15
Principal experience (years as principal)		0.108		0.101		0.08		0.074
Female teacher			1.696	1.519			1.152	1.039
Formal teacher			6.365**	6.499**			2.608	2.497
Teacher experience (years)			-0.053	-0.042			-0.039	-0.023
Teacher education=upper secondary			0.79	0.591			0.952	0.765
Teacher education=tertiary			0.73	0.638			0.514	0.555
Local teacher			1.912	1.615			2.019*	1.721
Teacher monthly income			3.841**	3.412*			1.451	0.819
Constant (Dummies for grades not shown)	63.990***	61.272***	32.953**	39.276*	57.679***	66.359***	44.577***	58.897**
Random effects parameters								
SD (Constant-Teacher)	1.336***	1.327***	1.314***	1.328***	1.463***	1.456***	1.426***	1.439***
SD (Constant-School)	1.716***	1.702***	1.683***	1.674***	1.668***	1.649***	1.681***	1.659***
SD (Residual)	2.555***	2.557***	2.556***	2.556***	2.406***	2.407***	2.405***	2.406***

Notes: N=1693. * p<0.05; ** p<0.01; *** p<0.001

Performance results in Table 37, suggest that children's math and language grades are contingent on a number of school and family resources. For math grades, without controlling for school and teacher characteristics, children of better-educated mothers and fathers are doing better. With school and teacher characteristics controlled, father's and mother's education continue to exert a significant positive effect. Children with better paid teachers and formal teachers receive higher grades in math. For language grades, girls, wealthier children, and children with better-educated parents are favored. Among school and

teacher characteristics, only having a local teacher shows a significant positive effect, and only in the teacher-only specification.

Summary

Aspirations and performance, the two measures of engagement that significantly condition subsequent enrollment, are themselves conditioned by socioeconomic status. For aspirations, being from a household with a better-educated father mattered in the full model. Female teachers seemed to help. Males and those with fewer siblings had higher aspirations. Being in primary schools with boarding students also showed a positive effect, though this category encompassed few students. For math grades, parent education level mattered. Having a better paid teacher and a formal teacher translated to better grades. For language grades, being female, wealthier, and from better-educated families helped.

Overall, findings from part 2 of this report suggest that children's attitudes and performance, along with family socioeconomic status, have a role to play in determining their educational trajectory. Findings also indicate that those factors at school that matter consistently for attitudes and performance, as for school continuation, are difficult to identify. Similarly, there is not a consistent story of school quality characteristics that directly help or hinder children's persistence.

The pattern of gender effects is more surprising. While girls have somewhat lower aspirations and are somewhat less likely to still be enrolled in 2004, girls are not disadvantaged in the attainment change measure or in the achievement of nine years of education. Moreover, there is no gender difference in math performance or confidence, and girls fare better than boys in language grades, industriousness, and alienation.

CONCLUSIONS

This report has sought to provide, first, a broad-based description of conditions in rural Gansu schools, and second, an analysis of educational outcomes guided by informant reports of factors that might matter for children's enrollment and persistence in school. In this concluding section, we do not seek to characterize all of the findings, but instead highlight results of particular policy relevance.

Finance Problems

At the time of these surveys, the most pressing problem in rural education continued to be that of finance. As can be seen from the results presented in various sections of this report, schools are securing economic support from a variety of public and private sources, the fee system is complicated and not very unified across schools, family's costs for educating children are high, and a substantial proportion of children who leave school are reportedly doing so for

direct reasons of not being able to afford school costs. In our main analysis of enrollment, change in attainment, and nine-year achievement, wealth effects are significant across specifications that control for multiple other school, teacher, and family background factors.

The government's capacity to reduce or eliminate costs as a barrier to educational access for the poorest families is crucial for the basic goal of extending an equal opportunity for education to children in these groups. This point is well-recognized by the government, which has renewed efforts to reduce or eliminate fees for basic education. For example, in 2005, the national and provincial governments in central and western China invested 7.2 billion RMB to expand a policy known as "two frees, one subsidy" (*liang mian yi bu*, 两免一补), which waives fees and provides boarding allowances for poor students during their nine years of compulsory education (Chang, 2006). According to a recent report in the *China Development Brief* (Chang, 2006), each beneficiary of *liang mian yi bu* receives 210-320 RMB a year, making school fees and textbooks virtually free, and some impoverished students in boarding schools also get living allowances.

In 2006, Premier Wen Jiabao pledged that the government would eliminate all charges on rural students receiving a nine-year compulsory education before the end of 2007 (People's Daily, March 05, 2006). An

amendment to the compulsory education law, which came into effect September 1, 2006, commits to giving children in both cities and the countryside nine years of free compulsory education, though tuition charges will not be completely waived for a few years (People's Daily, June 30, 2006). The initiative to provide free, compulsory education was rolled out nationwide in 2007 (Wu, 2007).

Central and local governments will have responsibility for expenditures, and local governments are to place expenditures for compulsory education in their budgets (People's Daily, June 30, 2006). According to a recent World Bank report, the cost sharing arrangement between the central government and the provincial and/or county governments is 80:20 in 12 western provinces and 60:40 in 10 central provinces (Wu, 2007). The transfer scheme began in spring 2006 in the western region and in spring 2007 in the central region. The coastal provinces will not be a part of the transfer scheme, although some poor areas are eligible to receive funds for reconstruction of dilapidated schools.

The success of these efforts to reduce cost barriers to access is critical. Of course, finance problems have implications far beyond access. As we know from earlier work, there are dramatic differences across China in per pupil expenditures (Tsang and Ding, 2005), and these differences doubtless translate to considerable differences in the quality of education that children experience at

school. In particular, finance problems likely underlie both infrastructure problems and teacher morale issues—problems to which we turn below.

Infrastructure Issues

At the most basic level of infrastructure provision, two concerning findings emerged. First, in 2004, principals reported that about 29 percent of primary classrooms failed to meet official safety standards, as did about 16 percent of junior high school classrooms. Second, in 2000, about 15 percent of primary principals reported insufficient desks and chairs for all students, and in 2004, just under one in ten primary and junior high school principals reported this problem. Safety and a place to sit are very basic requirements. The trend for desks and chairs appears to be in a positive direction (probably aided by demographic trends), but addressing these basic deficiencies for the minority of schools still experiencing them will be an important step toward providing a basic educational environment for rural students.

Another important feature of school infrastructure is whether or not schools have electricity. Here, our findings are encouraging: nearly all primary schools do, and all junior high schools do. Extending access to the last few primary schools that lack electricity is an important task. However, site visits to many rural Gansu schools suggest that the quality of lighting in many primary classrooms remains problematic, despite the fact that schools have electricity.

Schools may ask teachers to turn off lights to save on costs, or lighting may simply consist of a bulb that does not sufficiently light a full classroom. Dim classrooms may affect opportunities to learn, especially for children with vision problems.

At a level up from these basic infrastructure issues, many primary schools still lack libraries: just under one-third in 2000 and just under one-fourth in 2004. Again, progress between the two years is encouraging, but many schools still lack access. Additionally, having a library may not directly translate into children accessing reading materials. Site visits to rural schools suggest that student access to libraries can be limited. Because books and reading materials are valuable, schools often keep the library, an extra office, locked up. Moreover, the keeper of the key to the library is often not present.

Having accessible libraries may or may not be linkable to test scores, which is a high priority for schools serving communities where testing outcomes matter so much for children's subsequent economic circumstances. But access to reading materials beyond textbooks alone is crucial for children's broader development, which is a priority area under new educational policies in China.

Some might argue that facilities like libraries are a luxury in settings as poor as are many communities in rural Gansu. Of course, a first priority should rightfully be placed on expanding basic access. But after this goal is achieved, it

will be important to begin thinking about how rural schools can address the reality that many families have few economic resources to provide enrichment materials or experiences to their children. Schools need to consider providing an environment where children who have limited means to purchase enrichment materials at home can access these materials at school, and libraries that are fully accessible to children could be an important element of such an environment.

Finally, the strong presence of computers in rural schools in 2004—over a third of primary schools reported having computers, as did the vast majority of junior high schools—suggests that this resource is highly valued in rural schools. Like libraries, computers could be used to provide enrichment opportunities to children living with little. Certainly, the presence of computers does not necessarily imply that they are being used in a productive way, but lack of access is surely detrimental to children in a society where computer use is exploding. Moreover, the presence of computers raises significant policy questions: How are computer labs being financed? How are they being used, and how can we measure the quality of integration of computers into schools? What is the opportunity cost of computer labs, in terms of other needed facilities? These are important policy issues to be considered in further work on school infrastructure.

Teacher Morale

Few would argue with the notion that teachers are the most critical resources in rural schools. Families and principals repeatedly raise the concern that rural areas struggle to retain good teachers. This concern is warranted, if attitudes expressed in our sample are any indication. Although the vast majority of teachers liked teaching and were satisfied with teaching as a job, many also said that they wanted to change jobs. Just under one in five primary school teachers wanted to change their profession in 2000; about one in four agreed with the sentiment of wishing to change careers in 2004. More than one-third of junior high school teachers wanted to change careers in 2004.

It is likely that a major contributor to this problem is failure to pay teachers in a timely fashion. This finding is one of the most striking in our data. About 91 percent of primary school teachers were owed wages in 2000, as were 42 percent of primary school teachers and 47 percent of junior high school teachers in 2004. Just 13 percent of primary school teachers in 2000 said that their wages were usually or always paid on time, as did 57 percent of primary school teachers and 56 percent of junior high school teachers in 2004. These numbers, while improving quite dramatically between 2000 and 2004, suggest a persisting problem of major proportion in school finance.

Multivariate analyses with the 2000 primary teacher data linked wage delays to teacher dissatisfaction with their jobs (Sargent and Hannum, 2005). However, better paid teachers were not more satisfied in the 2000 survey. In 2004, a direct question about satisfaction with wages indicated that less than half of teachers were satisfied with this dimension of their work, even though wages rose substantially, at least in nominal terms, in the intervening four years.

Dedicated, capable teachers are critical for rural educational improvement. Reducing wage delays will certainly not resolve the difficult problems of teacher morale and retention in remote rural schools. Even fewer teachers—just over ten percent of primary and junior high school teachers in 2004—were satisfied with benefits aside from salary. However, addressing wage arrears is a necessary, if not a sufficient, prerequisite for resolving teacher morale problems. Steps in this direction may be in progress, as the government is reportedly centralizing responsibility for teacher wages (Shanghai Daily, 2005).

Teaching and Learning

A third area of policy concern is classroom practices. The Chinese government has recently implemented major reforms that encourage progressive, student-centered pedagogy. Without placing a value judgment on whether this kind of pedagogy is preferable to more traditional practices, it remains of

significant policy interest whether teachers subscribe to the new practices, and whether they are implementing them in the classroom.

Our results show that teachers report using a mix of traditional and new pedagogical approaches. Regarding traditional methods, the vast majority of teachers report sometimes or frequently using drilling, choral response, lecturing, and asking children to find answers in a textbook. Many teachers report sometimes using memorization, but few teachers report that they frequently use this method. Regarding new methods, the vast majority of teachers say that they sometimes or frequently ask open-ended questions, use classroom discussion, small-group activities, encourage individual student response, use inquiry learning, and ask students to participate in activities that connect theory to practice. Most teachers feel supported in the adoption of new methods: the vast majority agreed with a statement that the principal encourages them to use different teaching approaches, and a smaller majority agreed that the principal was a good source of information for teaching.

Child reports of classroom occurrences also suggest a mix of styles. A substantial majority of students report being encouraged to ask questions, but also agree with a characterization of class as consisting of the teacher lecturing while students listen. A less substantial majority report that animated discussions usually occur in class.

Sargent's (2006) multivariate analysis of Gansu teacher and student reports on teaching styles suggest that both teacher and student reports of progressive methods in schools were greater in schools that had begun implementing the official curriculum reforms. Her classroom observation data also shows that progressive pedagogical practices are more likely to occur in schools that had implemented reforms.

In summary, both traditional and progressive pedagogical approaches are occurring in rural Gansu schools, and progressive methods are linked directly to the new curriculum reforms. Are teaching styles associated with the new curriculum having an impact on outcomes such as achievement and subsequent enrollment? Are they having an impact on disparities in these outcomes? These will be key questions for the policy and research communities to address in the near future.

Student Engagement with Education and Performance

Our descriptive tables in part one lend a sense of the proportion of children who do not feel welcome at school. Our data suggests that roughly one in five children in both survey years often did not want to attend school. About fifteen to twenty percent did not feel happy at school. About one in four said that they were often lonely at school in 2000, as did just under one in five in 2004. Roughly one in three children in 2000, and over 45 percent in 2004, did not feel

that the teacher often paid attention to them in class. These numbers suggest that a substantial minority of students are disaffected.

Of course, there is no real benchmark against which to judge these findings; this level of disaffection may be a reasonable level or even a very low level. As time passes, it will become increasingly important to know more about disaffection, and its implications for long-term educational outcomes. We have discussed the fact that school finance remained the critical barrier to access for China's poor rural children in 2004: schooling costs were a burden on parents, and many children and their families reported that costs are a consideration in school-leaving decisions. Yet, reports by village leaders, families, and children themselves indicate that children's disaffection and performance are also important for understanding educational decisions. These factors are likely to influence parental considerations as they face the mounting costs of higher levels of schooling.

Children's engagement with schooling is influenced to some degree by conditions at school, as well as at home. While findings here do not suggest a consistent set of predictors of engagement and performance, other work with the same data (An, Sargent, and Hannum, 2007) has linked student perceptions of teacher behaviors in the classroom to student aspirations and alienation.

Given China's aggressive recent initiatives to address the cost barrier to education for the poorest families in China, the role of children's own willingness to stay in school will become increasingly important as an element of educational inequality. For this reason, understanding factors that are associated with performance and engagement will rise in policy significance in the future.

Implications

The Chinese government renewed commitments in recent years to support the development of poor rural areas, such as rural Gansu. The extension of meaningful educational opportunities to Gansu's young generation will be essential to the success of this broad endeavor. This report has suggested two kinds of barriers to educational improvement in Gansu. One kind of barrier is simply economic: many problems of infrastructure and economic deprivation in rural schools could, in theory, be quickly addressed, should funding be made available. This barrier is a major focus of China's current policy initiatives.

Other barriers are not likely to be fully addressed with a simple infusion of economic resources. For example, low teacher morale, along with its implications for retaining good teachers in rural areas, is a difficult dilemma. If teacher labor markets develop further, and if teachers have increasing opportunities outside of education, this problem may intensify.

Another fundamental problem is that, to truly equalize the playing field with wealthier urban schools, rural schools may actually need to work harder to give children real opportunities for success. Our analyses in part two of this paper highlight the critical importance of family socio-economic status for many school outcomes, even at the stages of education agreed upon to be compulsory. The difficulties faced by many impoverished rural parents with little education as they seek to providing resources that their children need to flourish at school are immense. If a truly equal playing field in basic education is required, creative thinking will be needed--thinking about how *schools* might provide material resources, cultural materials, and enriching experiences that are tailored to the needs of the rural children and families that they serve.

Finally, we have noted the problem of disaffection among a substantial minority of students, despite evidence that reforms designed to create more welcoming, nurturing environments in schools are, to some degree, being implemented. If the government is able to end poverty as a barrier to educational access, students' disaffection will become a more important source of educational decision-making. Work will be needed to understand how to sustain the engagement of impoverished rural children, once they are in the school system.

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Appendix 1. Descriptions of Selected Variables Employed in Multivariate Analysis

Variables		Comments	Mean or		N
			Proportion	SD	
2004	Change in Attainment	Attained Grades	3.85	(0.98)	1693
Outcomes	Enrollment Status	(1=Yes)	0.87	(0.34)	1693
	Nine Year Attainment	(1=Yes)	0.53	(0.50)	629
2000	Math Grade	(Average Score)	74.03	(14.74)	1677
Outcomes	Chinese Grade	(Average Score)	72.74	(13.29)	1671
	Aspirations	(Years)	13.08	(3.16)	1688
	Academic Confidence	Standardized Scale	0.00	(0.75)	1689
	Industriousness	Standardized Scale	0.00	(0.87)	1689
	Alienation	Standardized Scale	-0.01	(0.75)	1680
2000	Gender	(1=Female)	0.47	(0.50)	1693
Predictors	Age	(Years)	11.09	(1.15)	1693
	Ln(Wealth)	Ln(RMB)	9.21	(0.92)	1693
	Father's Education	(Years)	6.99	(3.50)	1693
	Mother's Education	(Years)	4.15	(3.47)	1693
	Siblings	(Number)	1.31	(0.72)	1693
	Teacher Gender	(1=Female)	0.34	(0.48)	1693
	Formal Teacher	(1=Yes)	0.22	(0.41)	1693
	Teacher Experience	(Years)	14.90	(10.11)	1693
	Teacher SHS Education	(1=Yes)	0.62	(0.49)	1693
	Teacher Tertiary Education	(1=Yes)	0.14	(0.35)	1693
	Teacher born in this Village	(1=Yes)	0.40	(0.49)	1693
	Ln(Teacher Monthly Income)	Ln(RMB)	6.02	(0.75)	1693
	School type=other (ref.=public)	(1=Other)	0.09	(0.28)	1693
	School has boarders	(1=Has Boarders)	0.03	(0.17)	1693
	Typical teacher absent 4+times per semester	(1=Yes)	0.06	(0.24)	1693
	Ln(Teacher av. monthly salary)	Ln(RMB)	6.33	(0.26)	1693
	School has daike teachers	(1=Yes)	0.57	(0.50)	1693
	School has minban teachers	(1=Yes)	0.34	(0.47)	1693
	Female principal	(1=Yes)	0.02	(0.15)	1693
	Principal experience (years teaching)	(Years)	22.00	(8.34)	1693
Principal experience (years as principal)	(Years)	9.17	(6.83)	1693	
Highest Grade Attained	(Grade)	3.35	(1.36)	1693	

Note: Unit of analysis in this table and multivariate tables is the child. The numbers of valid observations (N's) presented here include cases with valid observations on all predictors. Model N's vary depending on the numbers of valid observations in the outcome variables (2004 and 2000 outcomes in this table.)

Appendix 2. Components of Engagement Measures (2000)					
Concept	Component Variable(s)	N	%	Composite Measure	Mean SD
Aspirations	(highest level of education you want to complete)			Approximate Years	13.08 3.17
	<i>primary school</i>	88	4.75		
	<i>middle school</i>	176	9.5		
	<i>high school</i>	317	17.11		
	<i>junior trade school</i>	180	9.71		
	<i>senior trade school</i>	193	10.42		
	<i>university or above</i>	899	48.52		
		1,853	100		
Academic Confidence	(in your opinion, are you a good student?)			Standardized Scale	0.01 0.75
	<i>no</i>	230	12.41		
	<i>so-so</i>	839	45.28		
	<i>yes</i>	784	42.31		
		1,853	100		
	(rate your math ability)				
	<i>very poor</i>	151	8.15		
	<i>below average</i>	160	8.63		
	<i>average</i>	745	40.21		
	<i>above average</i>	433	23.37		
	<i>excellent</i>	364	19.64		
		1,853	100		
	(rate your language ability)				
	<i>very poor</i>	141	7.61		
	<i>below average</i>	128	6.91		
<i>average</i>	888	47.95			
<i>above average</i>	383	20.68			
<i>excellent</i>	312	16.85			
	1,852	100			
Effort	(work hard at math?)			Standardized Scale	0.00 0.86
	<i>do not study hard</i>	126	6.8		
	<i>occasionally study hard</i>	634	34.23		
	<i>generally study hard</i>	1,092	58.96		
		1,852	100		
	(work hard at Chinese?)				
	<i>do not study hard</i>	137	7.4		
	<i>occasionally study hard</i>	624	33.69		
	<i>generally study hard</i>	1,091	58.91		
	1,852	100			
Alienation				Standardized Scale	0.00 0.75
	(do not want to attend school most of the time)				
	<i>completely disagree</i>	897	48.36		
	<i>somewhat disagree</i>	552	29.76		
	<i>somewhat agree</i>	201	10.84		
	<i>completely agree</i>	205	11.05		
		1,855	100		
	(often feel bored at school)				
	<i>completely disagree</i>	515	27.81		
	<i>somewhat disagree</i>	842	45.46		
	<i>somewhat agree</i>	315	17.01		
	<i>completely agree</i>	180	9.72		
		1,852	100		
	(often feel lonely at school)				
	<i>completely disagree</i>	597	32.39		
<i>somewhat disagree</i>	747	40.53			
<i>somewhat agree</i>	300	16.28			
<i>completely agree</i>	199	10.8			
	1,843	100			

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