

Education in Developing Asia

Volume 5

**The Quality of Education:
Dimensions and Strategies**

David Chapman and Don Adams



Asian Development Bank
Comparative Education Research Centre
The University of Hong Kong

Asian Development Bank

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Jointly published by:

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Philippines

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Obtainable from either address.

Series: Education in Developing Asia
Series editor: Mark Bray

Layout and index by Sara Wong.

The findings, interpretation, and conclusions expressed in this study are entirely those of the author and should not be attributed in any manner to the Asian Development Bank or the University of Hong Kong.

A summary of an earlier version of this booklet was presented as an article in Vol.29, No.7 (1998) of the International Journal of Educational Research, published by Pergamon Press. The publishers of this booklet thank Pergamon Press for permission to reproduce some of the materials from the journal article.

ISBN 971-561-407-8

ADB Publication Stock No. 100701

The series

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The Quality of Education:

Dimensions and Strategies

Contents

List of Tables	ii
Figure	ii
List of Boxes	iii
List of Abbreviations	iv
Foreword	v
Introduction	1
Concerns and Problems	2
The Meaning of Education Quality	2
Education Achievements, Concerns, and Problems among DMCs	2
Demographic and Economic Contextual Influences	7
Teaching and Learning: The Classroom and School	9
The Research Base for Effective Schooling	9
Teachers and Teaching	17
<i>Teacher Status, Recruitment, and Deployment</i>	17
<i>Preservice, In-service, and Continuing Training</i>	19
<i>Incentives for Teachers</i>	22
<i>Teacher Roles and Teacher Quality</i>	23
<i>Developing Quality Teaching in the Periphery</i>	27
Curriculum	30
Education Governance, Management, and School Organization	32
Policies and Strategies for Improving Education Quality	36
Systemic Changes and Reforms	36
Developing More Effective Teachers and Teaching	43
Developing and Sustaining High-Quality Education Institutions	47
Management of Teaching and Learning	49
Monitoring and Sustaining Quality Improvement	54
<i>A Technology for Assessing and Monitoring Education Quality</i>	54
<i>Conditions for Sustaining Quality Improvement</i>	55
Conclusion	58
Notes on the Authors	61
References	62
Appendix	68
Index	70

List of Tables

Table 1: Comparison of Student Achievement in Mathematics in Selected Economies, 1994-95	4
Table 2: Percentage of Children in Classes 1-5 with Basic Competencies	6
Table 3: Changes in GDP Growth Rates	8
Table 4: Selected Studies of School Effects in Asian Countries	11
Table 5: Dimensions of Effective Schooling	13
Table 6: Characteristics of a Quality School	16
Table 7: Working Conditions for Teachers in Low-Literacy Districts, Eight Indian States, 1993	18
Table 8: Teachers' Salaries as a Multiple of GDP per capita, by Region	22
Table 9: Changes in Teachers' Real Wages, 1985-1995	23
Table 10: Relationships Between Student Achievement and Teacher Gender in Pakistan	25
Table 11: School Characteristics that Narrow the Gender Gap in Mathematics and Language Achievement in Low-Literacy Districts, Six Indian States	26
Table 12: Policies Addressing Teachers' Needs and Concerns in Relation to Work in Peripheral Areas	39
Table 13: Types of Teacher Incentives	46
Table 14: Difference Between Centrally Controlled and Community-Oriented Approaches	53

Figure

Figure: A Simplified Model of Student Performance	10
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List of Boxes

Box 1: Conditions of Low Quality	5
Box 2: School Factors Associated with Higher Learning Achievement	15
Box 3: Effective Teacher and School Characteristics	16
Box 4: Teacher Status	17
Box 5: Teacher Preparation	19
Box 6: Limited Preservice Teacher Training	20
Box 7: Innovative In-service Programs	21
Box 8: How One Teacher Can Make a Difference	24
Box 9: Illiteracy in Can Ho Village, Viet Nam	27
Box 10: Advantages and Disadvantages of Multigrade Teaching	28
Box 11: Views of Education Administrators in the Philippines on Multigrade Teaching	29
Box 12: Adding Technology to the Curriculum in Papua New Guinea	32
Box 13: Initiating and Sustaining Education Improvements	56
Box 14: Why Does the Quality of Education Not Improve?	58

List of Abbreviations

ADB	—	Asian Development Bank
DMC	—	Developing Member Country
GDP	—	Gross Domestic Product
GNP	—	Gross National Product
FQL	—	Fundamental Quality Level
Lao PDR	—	Lao People's Democratic Republic
NCERT	—	National Council of Education Research and Training
NGO	—	Nongovernment Organization
OECD	—	Organisation for Economic Co-operation and Development
PRC	—	People's Republic of China
TIMSS	—	Third International Mathematics and Science Study
UNESCO	—	United Nations Educational, Scientific and Cultural Organization
UNICEF	—	United Nations Children's Fund

Note

In this booklet, "\$" refers to US dollars, unless otherwise specified.

Foreword

The Asian Development Bank (ADB) is a major source of funds and technical advice for the education sector in the Asian and Pacific region. ADB has provided nearly \$3.5 billion for education since 1990, representing an average of about 6 percent of total ADB lending per year during that period. ADB recognizes that human development is the basis for national and economic development, and that education – particularly basic education – is a fundamental element of human development. ADB seeks to ensure that its education investment is effectively targeted and efficiently utilized. It further recognizes that a clear policy framework based on careful analysis of the status and development needs of the education sector is necessary for effective investment.

ADB has therefore committed itself to a comprehensive process of review and analysis as the basis for preparing a new education sector policy paper. The policy paper will guide ADB in its support for education in the first years of the 21st century. It will be based on a series of activities, all designed to ensure that the education policy adequately reflects the rapidly evolving circumstances of the region.

ADB commissioned eight country case studies and five technical working papers as inputs to the policy formulation process. The case studies, undertaken by leading education research institutes in the countries concerned, analyzed the issues in education and the policies that had been developed to address the issues. The technical working papers examined selected cross-cutting issues in education development in the region. The case studies and the technical working papers were discussed at a major regional seminar involving representatives of government ministries of education, finance, and planning. Later, the case studies and working papers were integrated into a single publication *Education and National Development in Asia: Trends, Issues, Policies, and Strategies*. This study in turn was an input into ADB's education sector policy paper.

The five technical working papers contain a great deal of useful data and analysis, and it is important to ensure that they are fully available to education policymakers, practitioners, and scholars in the region and elsewhere. Consequently, revised versions are being published separately in their entirety jointly by ADB and the Comparative Education Research Centre of the University of Hong Kong as part of this series entitled *Education in Developing Asia*. ADB hopes that the papers and their wider availability will contribute to a

better understanding of the emerging challenges of education development in the region. ADB is pleased to have the partnership of a well-known academic institution in this publication, and thanks the authors and their associates for their contribution.

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Introduction

Virtually every country in Asia has identified improving education quality as one of its highest national priorities. In spite of progress in responding to the demand for increased school access, developing more effective national planning and policy mechanisms, and implementing massive training programs for teachers and administrators, dissatisfaction persists with the capability of education systems to support national economic and social aspirations. To some extent, plans and policies calling for higher-quality schooling now supplement or even replace earlier attention to such priorities as education expansion and school access. It would seem that a consensus is forming that immediate attention of policymakers and involved international agencies should be focused on designing and implementing policies, programs, and actions to improve education quality. Translating the growing consensus into viable policies is a major challenge.

This booklet examines the concerns expressed among developing member countries (DMCs) of the Asian Development Bank (ADB) about education quality, reviews relevant research, focuses directly on teaching and learning, and suggests strategies that countries committed to quality improvement might use to raise school quality over the next decade. Attempts are made where possible to interpret education quality within the context being described. The most common meaning of education quality as inferred from its usage relates to level of student achievement on selected portions of the national curriculum. On this basis, populations of students have been compared across countries, across regions, within countries, and between schools in given localities.

The booklet commences by outlining broad concerns and problems among DMCs. This section comments on the meaning of education quality, and notes demographic and economic contextual influences. The booklet then turns to aspects of teaching and learning, noting the research literature on effective schooling, on teachers, on curricula, and on governance, management and school organization. The next section addresses policies and strategies for improving quality. It focuses on both systemic changes and subsector domains. Finally, the booklet concludes with a summary and comment on future prospects.

Concerns and Problems

The Meaning of Education Quality

The precise meaning of education quality and the path to improvement of quality are often left unexplained. Examined within context, education quality apparently may refer to inputs (numbers of teachers, amount of teacher training, number of textbooks), processes (amount of direct instructional time, extent of active learning), outputs (test scores, graduation rates), and outcomes (performance in subsequent employment). Additionally, quality education may imply simply the attaining of specified targets and objectives. More comprehensive views are also found, and interpretation of quality may be based on an institution's or program's reputation, the extent to which schooling has influenced change in student knowledge, attitudes, values, and behavior, or a complete theory or ideology of acquisition and application of learning (Adams 1998).

As education systems grow and the numbers of stakeholders and clients involved in education decisions change, the potential for misunderstanding, disagreement, and conflict regarding the meaning of quality increases. Full agreement among parents, teachers, administrators, and students as to the ingredients of quality, how to measure it, and how to initiate and sustain improvement is unlikely. Nevertheless, as this booklet shows, many dimensions can be identified and addressed.

Education Achievements, Concerns, and Problems among DMCs

The increased concern for education quality has resulted from a variety of factors including: (i) inability to adequately staff and finance rapidly expanding education systems; (ii) research-based evidence of low levels of learning in basic skills; (iii) new demands for advanced language, mathematics, and, increasingly, computer skills, stemming from industrialization; and (iv) financial crises that have had an adverse effect on education budgets – in some cases reducing internal efficiencies and eliminating plans for qualitative improvement.

Generalizations about education quality are difficult across DMCs. The more economically advanced countries of Asia are among the world leaders in student achievement on core subject areas, as measured by comparisons of cross-national test scores. However, in the poorer countries many students even after several years of primary schooling may not have acquired basic literacy and numeracy. Moreover, the disparities in the quality of instruction

and learning across regions within a single country sometimes exceed the differences between countries.

Table 1 provides cross-country data on four grade levels of mathematics from the Third International Mathematics and Science Study (TIMSS). The extremely high rankings of Hong Kong, China; Republic of Korea; and Singapore in mathematics are perhaps reflections of the education progress of high-performing Asian economies. These economies also ranked high on parallel tests in science (Beaton et al. 1996). Thailand scored above the international average in 7th and 8th grade mathematics and somewhat below the international average in 3rd and 4th grade mathematics.

In contrast to the few Asian leaders, there are many DMCs in which the persistence of low-quality education is widely demonstrated. Policymakers in countries in South Asia and Southeast Asia, for example, point to the inability of the education systems to produce labor forces sufficiently literate and skilled to compete internationally. Children, even after several years of primary education, may not have acquired basic numeracy and literacy skills. Moreover, teachers, often with only a partial secondary education, may have difficulty in understanding the concepts and operations found in the curriculum. Box 1 summarizes concerns for education quality found in three DMCs.

A further sample of problems and constraints frustrating attempts at attaining higher education quality can be found in the Country Sector Studies (see Appendix for the list of Country Sector Studies referred to in this booklet):

Indonesia	Low general qualifications of some teachers; low mastery level of teachers in subjects taught; low status of teaching.
Kyrgyz Republic	Need to revise (and reduce) the content of instruction in order not to overload students; shortages of library facilities and books; shortage of new technical equipment; inadequate testing of students' knowledge.
Pakistan	Poor physical facilities; inadequate distribution of materials; high school fees; "ghost" schools that only exist on paper; shortage of trained teachers; high student/teacher ratio.
Philippines	Inadequate teacher in-service training; low teacher salaries; misallocation of teachers (teachers not teaching their specialties).
Papua New Guinea	Inadequately trained teachers; shortage of quantity and inadequate quality of textbooks; failure of innovations to result in improvement.
People's Republic of China (PRC)	In the past, too much emphasis on examinations; heavy teaching schedule of teachers; low salaries of teachers; inadequate supply of teaching materials.

Table 1: Comparison of Student Achievement in Mathematics in Selected Economies, 1994-95

3rd Grade		4th Grade		5th Grade		8th Grade	
<i>Economy</i>	<i>Average achievement</i>						
Rep. of Korea	422	Singapore	484	Singapore	601	Singapore	643
Singapore	414	Rep. of Korea	471	Rep. of Korea	577	Rep. of Korea	607
Japan	400	Japan	457	Japan	571	Japan	605
Hong Kong, China	387	Hong Kong, China	447	Hong Kong, China	564	Hong Kong, China	588
Czech Republic	361	Netherlands	438	Czech Republic	523	Czech Republic	564
Netherlands	357	Czech Republic	428	Netherlands	516	Slovenia	541
Austria	351	Austria	421	Austria	509	Netherlands	541
Slovenia	351	Slovenia	414	Hungary	502	Austria	539
Australia	347	Ireland	412	Ireland	500	Hungary	537
United States	344	Hungary	410	Australia	498	Australia	530
Hungary	340	Australia	408	Slovenia	498	Ireland	527
Ireland	340	United States	407	Thailand	495	Canada	527
Canada	334	Canada	395	Canada	494	Thailand	522
Latvia	328	Israel	394	England	476	Israel	522
Scotland	323	Latvia	388	United States	476	New Zealand	508
England	321	Scotland	383	New Zealand	472	England	506
Thailand	309	England	376	Scotland	463	Norway	503
New Zealand	305	Cyprus	366	Latvia	462	United States	500
Cyprus	296	Norway	365	Norway	461	Scotland	498
Greece	294	New Zealand	362	Iceland	459	Latvia	493
Portugal	291	Greece	356	Cyprus	446	Iceland	487
Norway	287	Thailand	354	Greece	440	Greece	484
Iceland	276	Portugal	340	Portugal	423	Cyprus	474
Iran	245	Iceland	338	Iran	401	Portugal	454
Israel	—	Iran	294	Israel	—	Iran	428
Kuwait	—	Kuwait	267	Kuwait	—	Kuwait	392
International average	334	International average	391	International average	493	International average	520

Source: IEA Third International Mathematics and Science Study (TIMSS) 1994-95.

Box 1: Conditions of Low Quality**Case 1: Lao PDR**

A critical requirement is to improve education quality. The poor quality of education inputs and processes in basic education is evidenced by inappropriate curricula and teaching methods. Textbooks are scarce or nonexistent in many schools. Access to instructional materials is diminishing as parents have to pay. In addition to the problems of financing, the lack of instructional materials has been due to the absence of a reliable delivery/distribution system to the schools. Low levels of teacher qualification, and the absence of systems for teacher upgrading and professional support are endemic at all levels of education. Teachers' effectiveness in the classroom is low with 84 percent of teachers not being formally trained. More fundamentally, the instructional hours (estimated at 10 per week) is well below half of international norms. The majority of school facilities do not provide the minimum physical conditions required for teaching and learning. Buildings are deteriorating because of lack of maintenance (ADB 1993).

Case 2: Viet Nam

Schools are poorly furnished and equipped. Students lack textbooks, and the curriculum itself is largely irrelevant to contemporary needs. Assessment systems are poor. Teachers do not have sufficient training and are unaware of new and more effective methods of teaching. All these factors contribute to the decline in quality. Other factors contributing to this decline depend on the substantial economic changes that Viet Nam is undergoing and that clearly affect the demand for entering – or staying in – the education system (Viet Nam Country Sector Study 1997).

Case 3: Nepal

Lack of trained teachers is one of the burning issues of schooling in Nepal. The trained teachers, on the other hand, face a lack of opportunities for follow-up professional development programs.

The classroom instructional practices are still very poor, and schools are yet to be reformed to run properly. Teacher morale is yet to be enhanced; teacher training needs to be expanded and diversified in its mode of delivery to produce the adequate number of trained teachers conveniently and effectively; teachers need to be trained to become sensitive to emotional, psychological, as well as education needs of the children. There is also a need for curriculum reform to make it relevant and effective to the needs of society so that the opportunity cost of education for the population generally is not an issue.

Dissatisfaction with the costs of rapid expansion of education systems, disillusion with the apparent growing lack of fit between schooling and the world of work, and a general concern over the low level of basic education, have given impetus to the search for new, more effective, and more efficient models of education. The increased interest in education quality, typically defined in terms of student achievement, has been further stimulated by ripples of optimism flowing from a body of empirical research which, in developing countries, suggests that certain manipulable school inputs can significantly affect student performance, and which, in industrialized countries, seems to conclude that the characteristics of high-quality schools are not only known, but to a degree, are common across a range of cultures (Nepal Country Sector Study 1997).

Empirical evidence of limitations of schooling to produce basic literacy and necessary skills can be found in several DMCs. A study, involving a nationally representative sample of 11-12-year-old children in Pakistan (Pervez 1993) assessed children's mastery of a number of basic competencies: life skills knowledge; rote reading; reading with comprehension; writing from dictation; writing a letter; numeracy and arithmetic; mental arithmetic; and reading of the Holy Qur'an. Results were highly variable throughout the country and across the various tasks (Table 2). In general, there are serious grounds for concern about quality of teaching issues, especially in tasks that require application of school learning to life-relevant tasks.

All DMCs, even high-performing ones, have reported dissatisfaction with the quality of their education systems. Often mentioned or implied are inputs such as teacher training, the lack of teacher motivation, the need for curriculum revision, inadequate facilities, and insufficient textbooks. Strategies proposed to improve quality include improved inputs such as the use of more technology, incentives for productivity of teachers, establishing or clarifying national standards, and increased in-service training of teachers. Strong evidence is not presented that these strategies can be cost effective. Moreover, little consideration is given regarding the possible trade-offs of choices by decision makers seeking to weigh their options. The recommendations do, however, reflect prevailing assumptions about what important, relevant strategies are available to policymakers for increasing schools' contributions to learning.

The Country Sector Studies and most international agency literature tend to assume a common, but nonexplicit, meaning of quality that usually seems to be a measure of student achievement. Some comments are also made regarding the need for teachers to be more conscious of the psychological needs of students and the multiple social skills and commitments required in society. Usually, however, the examination of quality problems has been in terms of deficits (Agarwal and Harding 1997a). Recommendations for improving quality have been presented in terms of reducing deficits by providing more funds, materials, and additional training. The Country Sector Studies further suggested that quality could be improved by altering the role of teachers to become more reflective of their practice, the further use of evaluation techniques in the classroom, more innovative and piloted experiments in school organization, more effective allocation of teachers, developing in-service training in actual class situations, and performance-based incentives for teachers and administrators.

Table 2: Percentage of Children in Classes 1-5 with Basic Competencies

Competencies	Classes					Percentage of competent children
	1	2	3	4	5	
Life skills knowledge	8.1	7.0	17.4	27.0	29.4	26.1
Rote reading	32.4	36.6	68.7	84.7	90.9	63.7
Reading with comprehension	2.7	7.0	15.9	22.9	33.5	26.8
Writing from dictation	0	23.9	59.0	81.8	88.5	61.7
Writing letter	0	0	2.1	6.7	17.4	18.1
Numeracy and arithmetic	18.9	32.4	66.7	86.9	91.9	69.6
Mental arithmetic	8.1	16.9	17.9	40.8	52.7	67.7
Reading of Holy Qur'an	6.7	8.8	7.7	40.0	67.9	44.2

Source: Pervez 1993.

Demographic and Economic Contextual Influences

The ability of nations to expand and improve education systems is strongly influenced by demographic and economic contexts. The demographic change taking place in Asia is basically a transition from high mortality and fertility rates to lower mortality and fertility rates. Fertility and mortality declines have followed a pattern of demographic divergence, with East Asia (Hong Kong, China; Republic of Korea; Malaysia; Singapore; and Taipei, China) entering demographic transition early and South Asia, later. Variations in demographic structures help explain economic and education growth rates. They have consequences for quality education, and have given East Asia an advantage over South Asia. For East Asia the change has meant more citizens of working age, paying taxes, saving, and contributing to the economic development of their countries (ADB 1997, 21) and fewer children entering school and, presumably, drawing down on those taxes and savings. This demographic shift had two consequences. First, more money was available to finance both the public and private costs of education. Second, there were fewer children to educate. This "breather" allowed countries the opportunity to extend access to those still not in school and, eventually, to direct more funds to quality improvement. One consequence was that much of East Asia has had nearly universal primary education since 1975. In that subregion, the decline in the size of the school-age cohort compared with the previous decade resulted in about a 3-4 percent rise in secondary school enrollments since the mid-1970s and a 10-13 percent increase in expenditure (ADB 1997, 161).

Favorable demographics and increased industrialization were important factors in fueling the economic growth enjoyed by much of the region, and led to sharply improved health and nutrition, a reduction in poverty, and widespread extension of education opportunity. Not all countries have enjoyed this growth, and there are sharp disparities across the region and within countries. Between 1985 and 1995, the growth of gross domestic product (GDP) per capita in South Asia was approximately half of that of East Asia. Economic growth did not necessarily eliminate poverty, nor were education benefits equitably distributed between boys and girls.

Lewin points out that the quantity and quality of schooling are particularly sensitive to the size of the school-age cohort. He notes (1996, 50):

Richer DMCs with lower dependency ratios have been able to invest more per child at similar allocations of funds. High dependency ratios in poorer countries, by forcing choices as to which children go to school, tend to be associated with suppression of female enrollments and, thus, indirectly, may reduce the number of opportunities in the labor market for girls.

Moreover, the level of prosperity of the high-growth countries may not continue. As Table 3 indicates, some of the leading economies in Asia experienced a sharp downturn in GDP during 1997 (Samuelson 1998). The financial problems sweeping the region may foreshadow a new trend – or at least a new level of caution in making predictions. The money that financed education growth in the past may not be there in the future.

Within-country differences in certain education inputs, particularly between urban and rural areas, can be great in most DMCs. The Viet Nam Country Sector Study (1997, 16-17), for example, noted that:

Discrepancies exist between the northern and southern portions of the country. Internal efficiency of primary education (as measured by input-output ratios) between 1987 and 1989 in the north was 64.5 percent and in the south 49.8 percent. (For secondary education, the figures were 55.9 percent in the north and 28.8 percent in the south. For upper secondary education they were 58.5 percent and 32.1 percent, respectively.) Highland areas have the lowest internal efficiency ratios and the lowest enrollment rates. Minority groups inhabit these highland areas.

Another case of within-country disparities is described in the Pakistan Country Sector Study (1997, 29):

Various studies done on education facilities and quality of education suggest a growing quality gap [within] Pakistan's school system.... [A]bout 25,000 primary schools are without school buildings and many schools are without walls. In rural areas most schools are one room without water and latrine facilities. Books are expensive and do not get distributed on time, implying that 40 percent of the poorest households have little or no access to textbooks in primary and lower secondary schools.

Such conditions stand in stark contrast to the more affluent schools in Islamabad, Karachi, and Lahore.

Generally, the pattern of education expansion and, by some indicators, quality follow the pattern of economic growth with high levels of economic growth associated with high levels of literacy and education attainment. Fluctuations in the economy can have quick education repercussions. A sharp economic downturn in the early 1990s, for example, hit former countries of the Soviet Union (Kazakhstan, Kyrgyz Republic, and Uzbekistan), which had a long tradition of high literacy and high levels of school enrollment. There is, however, at any given economic level a wide variation in levels of education development. Positive education outliers in terms of their economic development include Mongolia, Philippines, and Sri Lanka.

Table 3: Changes in GDP Growth Rates
(percent)

<i>Country</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>
Indonesia	+8.0	+4.6	-12.5
Malaysia	+8.6	+7.8	-2.0
Korea, Republic of	+7.3	+5.5	-5.0
Thailand	+5.5	-0.4	-7.0

Source: Samuelson 1998.

Teaching and Learning: The Classroom and School

Improvements in the quality and, to some extent, the efficiency and equity of education depend on the nexus of teaching and learning. Schooling, the formal teaching-learning environment, can be influenced by resources and ideas from many sources. However, to a degree it is a self-contained system, and different schools (or even classrooms) may respond to a given set of inputs in different ways. The implication of this condition is that the characteristics, meaning, and effects of the interaction of teachers and students may be influenced through national policies but cannot be mandated from the central offices of ministries of education.

The Figure identifies some of the variables and sketches some of the relationships influencing student performance. The interrelationships between concepts of teacher quality, policies designed to enhance them, the context of schooling, and the dynamics of teaching and learning are highly complex. Because of the complexity in the linkages and relationships, policies aimed at improvements in teacher quality are difficult to research. However, two broad generalizations with policy implications can be made from the extensive body of research on the teaching-learning experience: (i) teacher quality (although difficult to capture by common indicators) has a powerful influence on student achievement; and (ii) national policy initiatives often encounter great difficulty in penetrating the school context. Increasingly, educators, researchers, and policymakers believe that teachers supported by effective management are the key to education quality and change.

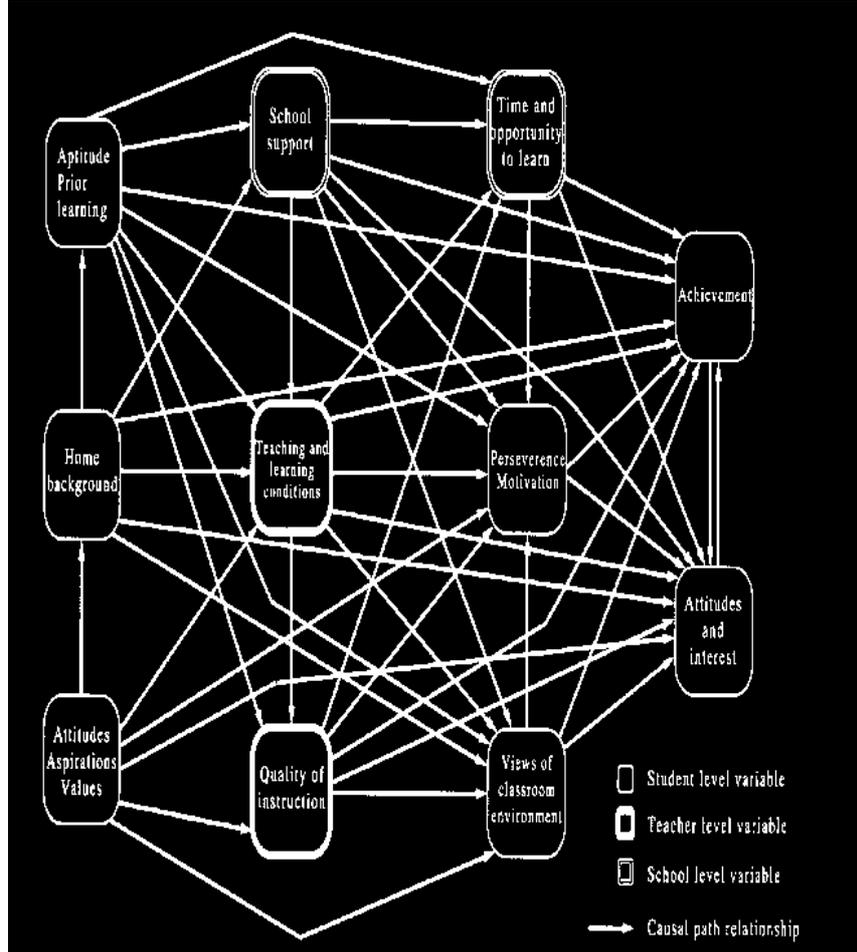
For schools to provide opportunity to learn, they must operate regularly. Teachers must be present and care about what students learn, and they should also be competent to teach the curriculum. Such conditions can be found throughout Asia. Also, however, particularly in poorer and rural areas, these conditions are frequently missing. This section briefly examines the Asian and international research base for effective schooling, and the quality issues surrounding teachers and teaching, curricula, and education governance and management.

The Research Base for Effective Schooling

Many of the policy documents published by the World Bank and ADB seek to specify those inputs which determine academic achievement and knowledge skills which translate directly into increased productivity of labor or are currency for acquisition of further formal education. Tables 4 and 5 summarize two bodies of research related to the determinants of school outputs, as typically

measured by scores on standardized achievement tests. Table 4 summarizes the findings of a number of studies of school effects in Asia using a production function or input-output model. The available studies are few and generalizations to all DMCs are not possible. However, the contradictions among the findings are striking.

Figure: A Simplified Model of Student Performance



Source: Keeves and Adams 1994, 955.

Table 4: Selected Studies of School Effects in Asian Countries

<i>Study</i>	<i>Economy</i>	<i>Findings</i>	<i>Source</i>
School expenditures per pupil	Indonesia (secondary)	School expenditures are not associated with higher achievement.	Harijati 1998
	Thailand	Textbook expenditures raise the national academic achievement.	Heyneman and Jamison 1984
	Malaysia (secondary)	Higher school expenditures are not associated with higher achievement.	Beebout 1972
Class size	Thailand	Negative evidence that small class size improves student achievement in reading and science.	Heyneman and Loxley 1983
	India	No evidence that smaller class size raises achievement.	Heyneman and Loxley 1983
	Indonesia (secondary)	No evidence that smaller class size improves student achievement.	Sembiring and Livingstone 1981
	Malaysia (secondary)	Fewer students per teacher improve the quality of interaction and raise achievement.	Beebout 1972
School size	Thailand	School size does affect student achievement.	Comber and Keeves 1973
	Indonesia (primary)	Large school size has positive effect on student achievement.	Muhammad 1997
School library	Thailand, India	The presence and active use of a school library raise achievement.	Thorndike 1973
	Indonesia (secondary)	Use of a library does not improve student achievement.	Beebout 1972; Harijati 1998; Sembiring et al. 1981
Number of class shifts	Malaysia (secondary)	More than one shift of classes each day strains the effectiveness of resources and lowers achievement.	Beebout 1972
Instructional materials	India	Greater availability of instructional materials leads to higher student achievement in reading and science.	Comber and Keeves 1973
	Philippines	Instructional materials do impact on student achievement in science.	Heyneman et al. 1983
	Indonesia (secondary)	No evidence that instructional materials lead to higher student achievement.	Sembiring and Livingstone 1981
		Instructional materials do not improve language achievement.	Harijati 1998
Laboratories	India (primary), Thailand, Iran	The presence and instructional time spent in laboratories raise science achievement.	Heyneman and Loxley 1983
Preservice teacher training	India	Teachers' years of schooling raise student achievement.	Comber and Keeves 1973; Heyneman and Loxley 1983
	Indonesia (secondary)	Teachers' years of schooling do not affect student achievement.	Sembiring et al. 1981
In-service teacher training	Indonesia	Upgrading the skills of teachers leads to higher student achievement.	Sembiring and Livingstone 1981

Study	Economy	Findings	Source
Teacher experience	India, Iran, Malaysia, Indonesia (secondary)	Teachers with longer experience improve student achievement.	Beebout 1972; Harijati 1998; Heyneman and Loxley 1983;
	Indonesia	No evidence that teacher experience is associated with student achievement.	Sembiring, et al. 1981
Length of instruction	India, Thailand	More hours or days of instruction increase student achievement.	Heyneman and Loxley 1983
	Indonesia	More hours of instruction increase student achievement.	Harijati 1998
Homework	India, Thailand	No evidence that homework raises student achievement.	Comber and Keeves 1973
High teacher expectation	Hong Kong, China	Teachers who expect high achievement raise student performance.	Rowe et al. 1966
Teacher's time spent on class	India, Iran	More hours spent preparing for class raises student achievement.	Heyneman and Loxley 1983
	Thailand	No evidence that class preparation leads to higher student achievement.	Heyneman and Loxley 1983
Active teaching and learning	Indonesia (primary)	Students participating in active learning perform better than students without active learning.	Tangyong 1989
Principal salary	Indonesia (secondary)	Higher salaries attract stronger principals, improve the instructional programs, and raise achievement.	Sembiring and Livingstone 1981
Vocational curriculum	Philippines, Thailand, Indonesia	Vocational curriculum is negatively associated with an effective labor force and earnings.	Clark 1983; Psacharopoulos 1973
In-plant vocational training	Korea, Rep. of	In-plant training is more cost effective.	Lee 1985
Preprimary schooling	Thailand (primary)	Third graders who attended preprimary schools performed better in mathematics and Thai language than did children who had no preprimary experience.	Raudenbush 1991
SES of parents	Nepal	Socioeconomic status (SES) of parents significantly determines the school access of children.	Shresta et al. 1986
	Indonesia (secondary)	Education of parents is not associated with student achievement.	Muhammad 1997
Gender differences	Malaysia, Indonesia	Both girls and boys demonstrate favorable attitude toward mathematics and possess equivalent problem-solving skills.	Swetz et al. 1991

Source: Consolidated by Muhammad 1998.

Table 5: Dimensions of Effective Schooling

<i>Dimensions</i>	<i>Core elements</i>	<i>Facilitating elements</i>
Leadership dimensions	<ul style="list-style-type: none"> • Positive climate and overall atmosphere. • School and classroom-site management and decision making. • Goal-focused activities toward clear, attainable and relevant objectives. • Planned and coordinated curriculum. • School-wide staff development. • Consistency of school values. 	<ul style="list-style-type: none"> • Shared consensus on values and goals. • Long-range planning and coordination. • Stability and continuity of key staff. • District-level support for school improvement.
Efficacy dimensions	<ul style="list-style-type: none"> • High and positive achievement expectation with a constant press for excellence. • Visible rewards for academic excellence and growth. • Cooperative activity and group interaction in the classroom. • Total staff involvement with school improvement. • Autonomy and flexibility to implement adaptive practices. • Appropriate levels of difficulty for learning tasks. • Teacher empathy, rapport, and personal interaction with students. 	<ul style="list-style-type: none"> • Emphasis on homework and study. • Positive accountability; acceptance of responsibility for learning outcomes. • Strategies to avoid nonpromotion of students. • De-emphasis on strict ability grouping; interaction with more accomplished peers. • Sense of school community. • Parental involvement and support.
Efficiency dimensions	<ul style="list-style-type: none"> • Effective use of instructional time: amount and intensity of engagement in school learning. • Orderly and disciplined school and classroom environment. • Continuous diagnosis, evaluation, and feedback. • Intellectually challenging teaching. • Well-structured classroom activities. • Instruction guided by content coverage. • School-wide emphasis on basic and higher-order skills. • Pupil acceptance of school norms. 	<ul style="list-style-type: none"> • Positive teacher models. • Opportunities for individualized work. • Number and variety of opportunity to learn. • School-wide recognition of academic success.

Table 5 summarizes a body of literature known as effective schools research. Although this research, in terms of variables examined, overlaps with the studies referred to in Table 4, somewhat more attention is given to school process variables.

The studies reviewed in Table 4 sought to determine the effects of variations in common inputs and with school processes on student achievement. Effects of exogenous variables, for example, socioeconomic status of families and gender were also reported. Contradictory findings on effects of such variables as school expenditures, class size, instructional materials, years of schooling for teachers, etc. suggest that the picture presented by research lacks clarity.

This set of studies to a degree reflects the lack of agreement found in the more inclusive body of similar international research. Within the larger body of research, the most common variables associated with student achievement include use of textbooks, instructional time, and education level of teachers. Some research suggests that in-school variables in developing countries (in contrast with family and household variables) have a larger impact on school output than they do in industrialized countries. Clearly, the body of research summarized in Table 4 does not hand the policymaker a package of manipulable inputs and processes that can be utilized to guarantee higher student achievement. Moreover, as demonstrated later, the input-output (production function) model on which these studies are based radically oversimplifies the dynamic and situation-specific nature of the teaching-learning processes.

The second strand of national and cross-national research was stimulated by a number of concerns, including the need for explanations of between-school differences in student achievement. The dimensions and elements of effective schools identified in Table 5 tend to be somewhat "softer," frequently more qualitative than many of the variables reflected in the studies summarized in Table 4. These dimensions were often examined directly through observation within schools and comparisons across schools or sets of schools. Table 5 offers a summary of the second body of relevant research, i.e., effective schools research, and particularly captures many of the organizational and process variables found in these studies. However, Table 5 is one of many summaries that could have been developed from this loose body of research.

Because of the general, and sometimes vague, nature of several of the dimensions and elements (e.g., positive school climate, effective use of instructional time), attempts at utilizing the research to develop more effective schools is likely to involve controversy. Moreover, the research on effective schools, largely carried out in Europe and North America, shares many of the weaknesses of school effects studies: (i) lack of underlying theory that validates indicators; (ii) use of standardized measures of pupil achievement that are not as sensitive to quality improvement efforts as curriculum-based assessments; (iii) exclusion of indicators of other student cognitive achievement measures (e.g., student self-concept, student behavior in school and in the community, student retention, teacher attitudes, and teacher behavior) that could provide a more comprehensive understanding of education quality improvement; and (iv) use of school-level indicators or aggregation of student data to the school level that can mask differential effects of factors on different groups of students (e.g., gender, ethnic, and social class differences) in the same school.

Because of these characteristics, research is unlikely to provide prescriptions readily adaptable across societies, regions, or even school sites; and explains little directly about the process of improving education, that is, implementing the policies and sustaining practices derived from such research activities. Lockheed and Longford make two additional points about the value of the production function model (school effects model used to identify determinants of student achievement). First, different regression models with different variables may yield new results. Second, "without any prior knowledge of the educational system, any justification for an intervention policy based on

the results of regression (or variance component) analysis, or even of structural modeling has no proper foundation" (Lockheed and Longford 1991, 146). However, in spite of these serious limitations, the reported research does offer insight sufficient to initiate small- and large-scale interventions that can be viewed as experiments. Further, research on school effects and effective schools, coupled with critical examination of practice, offers insights that can influence the content and delivery of in-service training programs for teachers and head teachers and the design of district- or school cluster-level innovations.

The lack of compelling research findings and the often contradictory evidence culled from experience stresses a need for caution in drawing implications for interventions. However, the potential for improving the teaching-learning process and raising the quality of individual schools is not as bleak as the inconsistencies in research and complexities of practice may suggest. First, there is sufficient international research to suggest "good bets" for investment of resources. Table 6 identifies some of the most frequently cited characteristics of a generic high-quality school. As noted earlier, these characteristics are frequently missing in the poorer DMCs. Second, in individual countries the implications of research for practice may be clearer than in cross-country analyses.

Two key observations are that the patterns of school factors associated with higher learning vary by location, and that the effectiveness of different inputs varies according to initial conditions. Box 2 reports school-level research in primary schools in India and Thailand. The study by Shukla et al. (1994) of achievement in 22 states of India identified about 10 statistically significant

Box 2: School Factors Associated with Higher Learning Achievement

Factors associated with higher student learning achievement include:

- creation of demand for improvement (given the limitations of supply-driven assistance);
- creation of reliance on local resources;
- participation and sharing of information;
- identification of stakeholders;
- division of tasks among stakeholders;
- diagnosis of community needs and supports;
- identification of relevant existing local organizations;
- formulation of methodology for mobilization of communities;
- development of technology for planning, implementation, and monitoring;
- capacity building and long-term commitment.

Patterns of school factors associated with higher learning achievement vary by location, and the effectiveness of different inputs varies according to initial conditions.

Source: Shukla et al. 1994, as cited in World Bank 1997.

Box 3: Effective Teacher and School Characteristics

"The results from our final analysis indicate that some teacher and school characteristics are **positively** associated with student learning in Thailand:

- the percentage of teachers in the school that are qualified to teach mathematics,
- an enriched mathematics curriculum, and
- the frequent use of textbooks by teachers.

At the same time, some teaching practices are **negatively** related to learning:

- the frequent use of workbooks, and
- time spent maintaining order in the classroom.

However, these causal statements do not hold if they are to be interpreted as the result of an external intervention. Obtaining additional textbooks for the schools is not a simple procedure unrelated to education process and management decisions: it is, itself, an outcome variable related to some unknown aspects of the education process. Similarly, discarding workbooks might not lead to improved outcomes, unless all the circumstances that lead to reduced use of workbooks are also present or are induced externally. External intervention will be free of risk only if we have, and apply, causal models for which the educational system functions. The models developed here, and elsewhere in the literature, are purely descriptive. Use of regression methods and of various component analysis allows improved description but does not provide inferences about causal relationships. In addition, interpretation of the estimates of effects is subject to a variety of influences, and there may be alternative regression models, with different variables that are equally correct in terms of prediction."

Source: Lockheed and Longford 1991, 145-6.

Table 6: Characteristics of a Quality School

- Teaching methodologies designed to encourage independent thinking;
- Capable, motivated, well-trained teachers;
- Appropriate, well-designed curriculum;
- Effective learning materials including, but not limited to, textbooks;
- A safe, well-maintained learning environment;
- A valid, reliable examination system;
- Effective school leadership, including instructional supervision;
- Ample direct instructional time;
- Adequate financing; and
- Effective organizational structure and support.

school-level determinants of learning in each state, but only two – the presence of "Operation Blackboard" and of parent-teacher associations – were positively associated with higher levels of learning in at least a third of the states (World

Bank 1997, 92). To a degree the factors identified in Box 2 may be seen as preconditions to some of the characteristics listed in Table 5.

Box 3 quotes the summary of the findings of a study on effective schooling in Thailand. The findings on the importance of the competence of teachers, well-developed curriculum, and use of textbooks support the list in Table 6. The comments in both Box 2 and Box 3 caution against oversimplification of research interpretation. Such studies as these, unfortunately, are not plentiful among DMCs, and other studies and evidence are needed to properly support policy choices in any given country.

Teachers and Teaching

Although the concept of quality teaching remains elusive, teachers and their behavior in the classroom are at times considered convenient indicators of school quality and very frequently are at the center of attempts at quality improvement. Of particular concern, as reported in the Country Sector Studies, are teacher status, changing teacher roles, and career patterns that locate teaching as a craft or profession and define the potential of the workplace. In terms of improving teacher performance, continual focus has been on content and delivery of skills during preservice and in-service training programs.

Teacher Status, Recruitment, and Deployment

Teacher status varies significantly across DMCs. Moreover, it varies over time and by level of education. In much of Asia, teachers historically have had a revered status. In Hong Kong, China; Republic of Korea; Singapore; and Taipei, China, status has been protected partly by tradition and through teacher salaries that have evolved and become moderately attractive. Rapid growth of enrollments accompanied a lowering of qualifications; competition from a

Box 4: Teacher Status

"Primary-school teaching has the lowest status of any profession and offers few chances for promotion. Most teachers start at government service Grade 7 – a rank they consider demeaning – and remain there throughout their careers. Unlike other government employees, who can enter at low grade but can move up to be supervisors, teachers have no career ladder" (Warwick and Reimers 1995, 29).

"Primary-school teaching has come to be seen as work attracting those with dubious academic skills who happen to know politicians. Unlike countries in which primary school teachers enjoy great respect even though they receive low salaries, in Pakistan they suffered from the stigma put on their work. The government and the society showed little respect for their professional credentials and treated them accordingly" (Warwick and Reimers 1995, 31).

Table 7: Working Conditions for Teachers in Low-Literacy Districts, Eight Indian States, 1993
(percent)

State	Schools with safe drinking water	Schools with toilet facilities	Schools with chairs for teachers	Schools with electricity	Grades in pukka buildings	Grades with classrooms	Schools with multigrade classes
Assam	21	10	81	0	22	43	59
Haryana	76	57	92	27	56	81	59
Karnataka	41	09	65	26	68	77	62
Kerala	36	65	65	27	65	105	1
Maharashtra	36	20	85	26	46	73	56
Madhya Pradesh	34	16	61	10	57	56	83
Orissa	26	8	85	16	60	58	69
Tamil Nadu	61	9	73	21	60	46	62

Source: World Bank 1997, 159.

growing number of occupations associated with modernization; and in many regions (see Box 4) depressed economic conditions have resulted in a decline in teacher status and respect. The heavy use of political favors in recruitment of teachers has added to the stigma. Qualification requirements for teachers, closely associated with status, increase at each rung of the education ladder. Thus, it is usually viewed as a promotion if a primary-school teacher qualifies to teach at secondary level.

The matching of supply and demand for teachers also varies greatly within and across DMCs. In India, while the growth rate of teachers varies across states, primary teachers make up the most steadily growing profession with almost 2 million primary and upper primary teachers employed in 1993.

Even so, in some states the growth of the teaching corps is not enough to keep up with the growing numbers of students. Thus, in 1993 the student/teacher ratio was 65:1 in Bihar, 38:1 in Assam and 49:1 in all of India (World Bank 1997). In Bangladesh the primary student/teacher ratio in the 1990s exceeded 60:1. Although it is not clear how those ratios translate into class size, it can be assumed that quality improvement will require a downward adjustment.

Large classes and poor physical facilities are common problems for teachers and students. Classes of over 50 pupils are common in Bangladesh and India. Moreover, inefficient planning, political favoritism, and population factors influence school locations, resources, and subsequent numbers of teachers. For example, the PRC Country Sector Study reports class sizes in some provinces of "only several" to 60-70 pupils. Teacher surpluses and shortages may coexist in the same country. Usually this translates into urban surpluses and rural shortages, as in the Lao People's Democratic Republic (Lao PDR), where there are serious imbalances in teacher deployment across provinces (ADB 1999). However, surpluses do not necessarily translate into quality improvements. Table 7 offers some insight into the unattractive working conditions teachers may face, particularly in rural areas. Low-literacy districts in eight Indian states report most schools without electricity, typically without safe drinking water, and often with no chairs for the teachers (World Bank 1997).

DMCs, in order to improve the quality of schooling and in spite of such weaknesses just identified, are beginning to raise education requirements for incoming primary-school teachers. In the economically more advanced East Asian countries, many primary-school teachers have acquired tertiary education. In India, most states have raised the general education requirement for teachers from 10 to 12 years of schooling (World Bank 1997, 146). This reform places India ahead of other DMCs with comparable education indicators (e.g., PRC requires nine years and Pakistan requires 10 years) and equal to some of the Organisation for Economic Co-operation and Development (OECD) countries where the minimal education attainment for primary teachers is 12 or 13 years (OECD 1994). The trend as countries develop economically and education systems grow is for preservice teacher preparation for basic education to take place in secondary school (both general education and pedagogic training); then subsequently, in specialized tertiary education; and eventually in universities.

Preservice, In-service, and Continuing Training

Hanushek (1994) observes that education systems routinely and worldwide pay for two teacher characteristics not positively associated with student achievement: qualification and experience. Indian experience confirms that proxies for teacher quality – such as type of certification, preservice education, or salary – typically are not related to student learning achievement (Kingdon 1995). In further agreement, a World Bank report notes that teachers' experience has not been found to be an important predictor of student achievement in the major empirical studies (World Bank 1997, 97).

However, studies of learning achievement among primary school students have often linked low achievement to weaknesses of teachers' poor subject mastery (traced to weak general and preservice education), limited teaching skills (traced to inadequate pre- and in-service training), and high absenteeism (traced to poor motivation and working conditions). Teachers' lack of subject mastery (not necessarily reflected in official qualification certification) is a major concern reported in the Country Sector Studies. Teachers simply may not understand the content they are obliged to teach (see Box 5). This is apparently attributed to various factors, including a weak or incomplete secondary education and preservice training curriculum that omits advanced subjects.

Box 5: Teacher Preparation

Pakistan prepares its candidates for teaching mainly through two types of training: formal education and teacher certification. Though this was never its explicit purpose, formal education has a much closer relationship than teacher certification with student achievement in mathematics and science. As their education goes up teachers seem to develop a greater mastery for the material they are teaching and better methods for teaching it.

Source: Warwick and Reimers 1995, 58.

Box 6: Limited Preservice Teacher Training

In India teachers need – but do not receive – preparation for teaching in the situation that two-thirds of them have to face: multiage, multilingual, multigrade classrooms. The National Council of Education Research and Training (NCERT) model curriculum for primary preservice training allocates less than 20 percent of the program to practicing teaching and 20 percent to developing pedagogic skills. As a result, the repertoire of teaching skills among primary teachers is limited and, particularly in poor, rural areas, weighted toward practices that do not encourage active student learning: lecturing, oral reading, and copying.

Source: World Bank 1997, 27.

Strategies to improve teaching and learning are likely to include upgrading skills of teachers by upgrading preservice or in-service teacher training. Issues pertaining to current preservice programs include the amount of general education, the duration, and the proportion of time devoted to classroom demonstration and practice. Teachers, themselves, are aware of the inadequacy of preservice training. In India, a survey undertaken in rural schools in Haryana and Kerala of teachers' opinion on their preservice training disclosed their high level of dissatisfaction with their teacher preparation programs, even to the quality of the instructional staff, their textbooks, and the quality of the school libraries. Substantial numbers of teachers, particularly in South Asia and rural parts of Southeast Asia, are not fully qualified for the positions they hold. In Bangladesh, for example, 87 percent of nongovernment teachers are untrained. In India, great variations of supply of trained teachers are found across states. As noted by the World Bank (1997, 157):

Although some states in India require no teacher training, about 90 percent of primary teachers are trained and eligible to receive a primary teaching certificate after completion of two years of training (except in Andhra Pradesh, Assam, and West Bengal where there is a one-year course). Several of the smaller states report that less than 50 percent of teachers have been trained: 43 percent primary and 41 percent upper primary in Arunachal Pradesh; 6 percent and 29 percent in Manipur; 42 percent and 36 percent in Meghalaya; 48 percent and 26 percent in Nagaland; 49 percent and 41 percent in Sikkim; and 34 percent and 35 percent in Tripura.

Qualified and unqualified are, of course, relative terms. Typically a teacher acquires certification through officially sanctioned training programs. If such programs have little relevance to teaching behavior and student performance, then the classification has little analytic value.

Criticisms of preservice programs in teacher training (see Box 6) have led to increased attention to the potential of in-service training as a supplement or alternative. The Country Sector Studies and various international reports

Box 7: Innovative In-service Programs

Two innovative in-service teacher training pilot programs are Joyful Learning, implemented by nongovernment organizations (NGOs) in several states in India, and Teacher Empowerment – a program sponsored by the United Nations Children's Fund (UNICEF). Joyful Learning involves child-centered activities and promotes active learning practices by motivating children and teachers to like learning, and teachers to adopt active learning activities in the classroom. The Teacher Empowerment program strives to improve the school environment by tapping into school-level resources and administrative support and to boost teachers' morale, self-esteem and will to improve teaching which, in turn, boost student enrollment and attendance. Teachers participate in a one-day motivational training session where they also receive guidance in preparing learning materials. There are monthly follow-up sessions at the school cluster level.

Source: World Bank 1997.

examine the limitations of in-service teacher training. Criticisms emphasize the lack of application to actual classroom situations, the absence of developmental and career planning, and the lack of participation of teachers in the design of training. In-service training, as in the case of Nepal and India, may simply be too rare to improve teachers' subject knowledge or to change instructional practice (World Bank 1997, 148). Also there is transmission loss in in-service training when programs do not plan for, or follow up on, the transfer of training to classroom practice. The Nepal Country Sector Study (1997, 47) stated that in-service training programs are simply not sufficient to fulfill the needs of "the huge numbers of untrained teachers" in the schools. In India, an evaluation sponsored by the National Council of Education Research and Training (NCERT) of the in-service training programs carried out in three Indian states between 1986 and 1989 for some 1.7 million primary teachers revealed that the method of instruction only rarely included demonstrations of teacher practices, although such demonstrations were in high demand by the teachers (Rao 1994).

Although issues related to teacher training tend to evolve around the content, cost, and usefulness of existing preservice and in-service training, some observers see additional types of training needed in order to produce good teachers. Teacher training is increasingly recognized as needing more than conventional training in pedagogic skills and strengthening of academic content (Harding 1996; Irvine 1995). The many programs of teacher empowering in the region demonstrate that in order to change teachers' attitudes, values, and practices, something more than technical training is needed (see Box 7). Examples abound in the region of education quality improvement programs that have failed to effect change in classroom methodology, particularly in those societies in which increases in classroom interaction run counter to established norms of authority, gender roles, and learning styles (Agarwal and Harding 1997a; Bray 1996; Fuller and Clarke 1994).

The teacher empowerment programs in Bangladesh, India, Nepal, and Pakistan, although not subject to vigorous evaluation, have awakened an

interest in the need to search for ways of dealing with the low self-esteem of teachers, absenteeism and corruption, and resistance to many of the education innovations which aim at achieving qualitative impacts on the classroom. As noted by Morley (1997, 4):

Teachers, who themselves are subject to the caste, class gender, and tribal disparities in many of the countries in South Asia, and who have, themselves, been subject to traditional styles of learning at school and in their training, will not change the authoritarian styles and rote learning in their teaching by being taken through yet another [traditional] training program.

Incentives for Teachers

Widespread concern about the difficulties in recruitment of talented personnel for teaching and about teachers' low motivation and high absenteeism has spurred an international search for potential teacher incentives (Lockheed and Verspoor 1991). Frequently suggested incentives include: (i) merit pay to motivate teachers with a significant portion of a teacher's salary based on performance as assessed by supervisors; (ii) salary premiums to mathematics and science teachers; and (iii) location premiums to teachers working in rural areas (Chapman 2002). Yet, apparent solutions to ineffective teaching and learning due to lack of incentives and motivations turn out to be complex because of organizational context. Teachers who do not receive merit pay may respond not by trying harder but rather by reducing their effort. And, paying premium salaries to math and science teachers may make other teachers angry, frustrated, and bitter. Further, many teachers would rather be unemployed in urban areas than work in certain remote regions (Murnane and Cohen 1986).

Teacher salaries are a perennial issue in most Asian countries. Table 8 suggests that teachers' salaries in Asia as a multiple of GDP per capita are low compared with those in Africa. Some Asian countries, for example, Bangladesh, Republic of Korea, and Thailand between 1985 and 1995 increased teachers' real wages by up to 101 percent (Table 9). Teachers in other Asian countries did not fare so well. In Viet Nam salary rates are very low in both absolute terms and relative terms (in comparison with other occupations of equivalent skill – particularly in comparison to those now emerging in the private sector). The average primary-school teacher's salary in the mid-1980s

Table 8: Teachers' Salaries as a Multiple of GDP per capita, by Region

<i>Region</i>	<i>Average salary to GDP per capita ratio</i>
West and Central Africa	7.28
South and Eastern Africa	5.90
Asia	1.84
Latin America	1.79

Source: Mehrotra and Buckland 1997.

Table 9: Changes in Teachers' Real Wages, 1985-1995

<i>Country</i>	<i>1985</i>	<i>1989-1991</i>	<i>1995</i>	<i>Change (%)</i>
Korea, Republic of	74	100	149 ^a	+101.0
Thailand	77	100	133 ^a	+72.7
Bangladesh	116 ^b	100	191	+64.6

^a Data refer to 1994.

^b Data refer to 1984.

Source: Mehrotra and Buckland 1997, Appendix B.

was between 0.8 and 1.2 times per capita gross national product (GNP), whereas it was 2.6 times per capita GNP in other Asian countries at that time; and the average pay for a secondary teacher in Viet Nam was 1.2 to 1.7 times GNP, compared with an Asian average of 3.8 times (Viet Nam Country Sector Study 1997, 16). In the Philippines, "The relatively low compensation of teachers makes the profession unattractive for bright people who self-select to courses that bring better payoffs after graduation" (Philippines Country Sector Study 1997, 22).

There are, of course, conditions other than salaries that affect teachers' self-esteem and well-being. Since the budgets for education currently are spent primarily on teacher salaries, other compensations and incentives must be sought. Many communities in DMCs now provide salary supplements, housing and, at times, food allowances. The Philippines has begun to implement such incentives as scholarship and training programs and recognition for exemplary performance (Philippines Country Sector Study 1997, 24). In disadvantaged communities or schools in Viet Nam where the community is too poor to provide material incentives to attract teachers, a system of honorable titles has been used ("people's teacher" or "teacher emeritus") to encourage professional improvement among teachers.

What keeps teachers in practice without adequate compensation or recognition? Research sponsored by the OECD in its member countries shows that the two primary reasons that teachers stay in their profession despite poor recognition and compensation are: (i) a tenacious commitment to helping children learn; and (ii) support from their colleagues in the workplace (OECD 1994). Where a threshold of income and compensation has been reached, these motivations may well become prominent in developing countries of Asia.

Teacher Roles and Teacher Quality

Central to the processes of teaching and learning and to education reform is the role of the teacher when engaging students in development of their intellectual and emotional strengths and in examination of learning within the context of their everyday experiences and the society around them. Teaching roles change over time in response to new patterns of education governance and management, new kinds of students, new theories of teaching and learning, and new technologies.

As the functions of school management change, the meaning of teacher effectiveness may change. Nevertheless, certain basic ingredients of "quality" teaching tend to persist. These include knowledge of substantive curriculum

areas; pedagogic skills; familiarity with multiple instructional strategies for use with individual and group activities requiring problem solving; application of concepts and higher-order thinking; ability to be reflective and self-critical; and motivation to help students learn (see Box 8). With devolution of management authority, to this traditional list may be added a more comprehensive definition reflecting newer needs and contexts, such as managerial competence and the ability to work collaboratively with other professionals (on instructional policy, curriculum, and staff development) and with students representing a wide range of cultural backgrounds.

In response to certain recent trends in theories of teaching, particularly those associated with “teacher empowerment,” a number of localized training programs have been developed in South Asia, particularly India. These programs have used motivational and participatory group training methods, linked to developing collegiality and self-help in cluster centers offering professional support (Harding 1996; Irvine 1995). The challenges for countries lie in linking such teacher empowerment programs with the community leaders, parents, and other education functionaries who are involved in defining quality and school effectiveness in a more participatory way. This particularly applies to the low-income DMCs which need to effect qualitative changes on a mass scale while at the same time increasing access by mobilizing communities – changing their perceived values of education and affecting their perceptions of opportunity costs in sending their children to school and foregoing the additional earnings of sending their children to the workplace (Agarwal and Harding 1997a).

In one of the few available studies looking at the influence of female teachers on student achievement, Warwick and Reimers (1995) examined the gender gap in Pakistan in mathematics achievement in grades 4 and 5, where students of male teachers had significantly higher achievement scores in mathematics than students of female teachers. After controlling for student and

Box 8: How One Teacher Can Make a Difference

The appointment of a teacher with a positive attitude, an interest in tribal life and culture, and a belief that, when taught properly, tribal children are educable made a big difference to an interior and backward region of Godavari district in Andhra Pradesh. When the teacher was transferred to a school in a village inhabited by one of the most “primitive tribal groups” (Kondareddi), only 8 of the 34 children enrolled regularly attended school. To bring the children to school the teacher was deliberately severe, but once they were in school, he encouraged their active participation. He visited each household in the village to obtain parents’ consent for the children to attend school and then went around the village daily to call the children to school. Researchers reported that during their field observations the children arrived at school even before the teacher. All the students in grades 1 and 2 were able to write the alphabet and to read the textbook fluently. And they were very self-confident.

Source: World Bank 1997, 139.

teacher gender, teaching practices, student social class, teachers' education, and location of school, the authors concluded that relationships between student achievement and teacher gender did vary in mathematics performance from one level of teacher education to another (Table 10). At one teacher's level of education, Table 10 confirms the common belief in Pakistan that students of male teachers score higher in mathematics. However, for teachers with university degrees, the gender gap favored the female teachers.

The location of the primary school was significant in helping explain the gender gap. In urban schools students with male and female teachers had the same mathematics achievement, except in two cases: where teachers had university degrees and where teachers taught more than the median content of curriculum. In both these cases the female teachers had higher-achieving students in mathematics. Warwick and Reimers (1995, 73) concluded that:

...given that 30 percent of Pakistan's elementary school students attend urban schools and that students of female teachers in urban settings have achieved higher than students taught by men, [there is a] need to use caution in assuming that male teachers are better. In urban schools, female teachers and students clearly have the edge.

The research by Warwick and Reimers also showed that the rural elementary schools were the main source of the gender gap in student achievement in mathematics in Pakistan in grades 4 and 5, "particularly among teachers responsible for more than one grade" (Warwick and Reimers 1995, 73). The researchers added (p.75) that:

Pakistan has a distinctive and often negative environment for women to teach mathematics in its rural schools.... For women from cities [there is] an inhospitable environment around these schools, both physical and cultural. Local suspicions force them to find housing with watchmen and boundary walls or companions for their safety.

Another study of the gender gap in student achievement conducted by the World Bank (1997) in India noted that India's primary schools have twice as

Table 10: Relationships Between Student Achievement and Teacher Gender in Pakistan

<i>Teacher's level of education</i>	<i>Difference in student achievement in mathematics</i>	
	<i>Male teacher</i>	<i>Female teacher</i>
Completed middle school or less	Students of male teachers scored the same as those of female teachers.	Students of female teachers scored the same as those of male teachers.
Completed matriculation (largest group of teachers)	Students of male teachers scored significantly higher in both math 4 and Math 5.	Students of female teachers scored lower in both math levels.
University degree (approximately 15 percent of the teaching force)	Students of male teachers scored lower.	Students of female teachers scored significantly higher.

Source: Warwick and Reimers 1995.

Table 11: School Characteristics that Narrow the Gender Gap in Mathematics and Language Achievement in Low-Literacy Districts, Six Indian States

<i>State</i>	<i>Mathematics</i>	<i>Language</i>
Assam	Access to teaching materials; parental involvement.	Teacher assigning homework.
Haryana		Head teacher acting as leader.
Karnataka		Stable teaching staff; high share of female teachers.
Madhya Pradesh	Teacher assigning homework.	High share of female teachers.
Orissa		High share of female teachers; more school physical facilities.
Tamil Nadu	Good teacher attendance and provision of special help.	High education attainment among teaching staff; high share of female teachers.

Source: World Bank 1997, 127.

many male teachers as female ones. In several states the gender gap was narrowed in schools with a higher percentage of female teachers, confirming the importance of increasing the share of female primary teachers (Table 11). However, the effects of the various school characteristics they identified were inconsistent across states, and “several of these effects may be due to the high share of male teachers in the schools with these characteristics and the fact that quality-enhancing inputs are disproportionately directed at male students” (World Bank 1997, 127-8).

Is there a link between the number of female teachers and administrators, and school quality? Warwick and Reimers (1995) suggest that under some conditions the answer is “yes.” A World Bank report (1997, 164) suggests that there is a need to match teachers with students:

Teachers often are more effective with students who share their characteristics. Female teachers are more effective with female students ... the gender gap in learning achievement is smaller in schools with a higher share of female teachers.

The India and Pakistan studies both agree that recruiting female teachers for rural primary schools is a particular need.

Teacher development, individual and collective, is cumulative and integrative, with earlier skills incorporated and built upon by later skills. Within the teaching pool, however, teacher quality may reflect varied and differentiated criteria. National or local contexts may prize certain objectives or values, which then promote various dimensions of teacher quality over time. Also, the problematic nature of teacher supply in the labor market and the expense involved in developing and sustaining high levels of competence have led in many DMCs to a teaching force that is heterogeneous in terms of teacher quality. Thus, the concept of teacher quality is stubbornly contextual and remains elusive.

Developing Quality Teaching in the Periphery

Improving the ability of teachers to perform more effectively in small rural and remote schools with students of widely ranging ages is a major challenge for raising student achievement in many DMCs. In India, the Government has been trying to meet this challenge by improving teacher quality on several fronts by raising preservice education requirements, improving teacher training, increasing the diversity of the teaching force (although it has to meet the diversity of the student population), and promoting stronger participation by local government and community organizations (World Bank 1997, 28).

The complexity of improving education in multiethnic, remote areas is illustrated by the case of a village in Viet Nam (Box 9). Teacher shortages in rural areas mean that rural primary schools have to ask teachers to manage multiple grades. As a consequence, multigrade teaching is beginning to come under much scrutiny as a potential viable innovation (Box 10). Rowley and Neilsen (1997, 185) observe that:

In time of teacher shortages, with projections pointing to the necessity for continued and even expanded dependence on multigrade classrooms to provide higher quality primary education, few Asian governments are developing plans for multigrade research or strategies for multigrade teaching. School systems continue to plan, train their teachers, and organize their curriculum around the single-teacher, single-grade classroom approach.

Papua New Guinea and the Philippines, however, are two of the growing

Box 9: Illiteracy in Can Ho Village, Viet Nam

Among the primarily H'Mong population of Bac Hai district (H'Mong 40 percent; Kinh 8 percent; Dao, Nung, Tay, Phu La 22 percent) there are 13,453 illiterates among a total population of 15,601 children in the age group 6 to 14 years. Among the 20,731 persons aged 15 to 35 years, 15,781 are illiterate.

In the primary school age group of Can Ho village, only 160 of 266 children attend school. School consists of five classes at first grade level and five classes at second grade level. No classes are held for third grade or above. There are 94 pupils in Grade 1, 60 boys and 34 girls, and 66 pupils in Grade 2, all boys. They study under the 120-week program for ethnic minorities. In addition there are 106 students in out-of-school literacy classes in the evening. In 1990/91, 24 of the first graders dropped out of school, 22 of whom were girls. Each had previously repeated the grade.

Among all the 266 children aged 6 to 14 who were interviewed, 45 could speak a little Vietnamese ("babble only"), six could understand a radio broadcast of Voice of Viet Nam, and only one student could read a 55-word paragraph (which took three minutes). In 1990, Can Ho "eliminated" illiteracy among 118 learners and in 1991 among 28 more learners. All have relapsed into illiteracy.

Source: Viet Nam Country Sector Study 1997, 17.

Box 10: Advantages and Disadvantages of Multigrade Teaching

<i>Advantages</i>	<i>Disadvantages</i>
<ul style="list-style-type: none"> • Efficient in providing basic education in thinly populated areas. • Efficient means of utilizing scarce education inputs, such as trained teachers, classrooms, and materials. • Maintaining rural schools is important in building village identity and cultural life. • Can benefit girls by expanding available school spaces and by helping to ensure that schools are located closer to home. • Students “learn to learn” and “learn to teach” through independent inquiry and peer tutoring. • Students and teachers develop a strong relationship over time. • Students benefit from the unique multiage and peer socialization patterns. • The stigma associated with repetition is removed. <p>Source: Rowley and Nielsen 1997, 186.</p>	<ul style="list-style-type: none"> • Students may receive less individual attention, and must often work independently. • Student achievement may fall if programs are not supported by the required resources and teachers are not properly trained. • Demands on teachers' time and organizational capabilities are high. They need special training and materials to perform their jobs effectively.

number of exceptions. For example, according to the Papua New Guinea Country Sector Study (1997, 62), multigrade teaching aims to:

... achieve annual intakes in all primary schools throughout the country and to make savings in the costs of providing teachers, but if the quality of teaching and the understanding that teachers have of multigrade teaching methodologies is poor then ... the spillover effects on students in multi-grade classrooms could easily undermine the achievements of the reforms and community confidence in the reformed education system.

The Philippines, after a period of experimentation with multigrade teaching, examined negative and positive reactions (Box 11). The Lao PDR is considering a national policy combining expansion of multigrade schools in remote areas with redeployment of teachers (ADB 1999). These two strategic reforms are expected to significantly extend the availability of basic education. Rowley and Nielsen (1997) offer the following recommendations to improve the utilization of multigrade teaching:

- the benefits and contributions of multigrade teaching should be recognized;
- multigrade teaching should be officially recognized as a legitimate form of education so that schools can be allocated the resources and governed under appropriate regulations (such recognition would include the ideal of local problem-solving and adaptation, such as peer instruction and use of community volunteers in the classroom);
- pre- and in-service teacher training should be modified to provide relevant training for multigrade teachers (possibly including student teaching in multigrade classrooms);

- school administrators should approach the management of multigrade teaching in a systemic manner, with appropriate policies in: (i) teacher recruitment, deployment and training; (ii) instruction in the local language; (iii) design of curriculum and materials (emphasizing self-instruction or locally made materials); (iv) school governance that involves the local community and students in school-wide decision making; and (v) school financing that encourages flexibility in allocation of resources from both outside and within the community.

Box 11: Views of Education Administrators in the Philippines on Multigrade Teaching

Reasons for wanting to continue

1. I have developed an innate love and respect for my children despite their deficiencies and inadequacies. I can serve a greater number of this kind of children.
2. The job is more challenging.
3. I feel successful when children learn.
4. I have to sacrifice for the best interest or good of the children.
5. To know if I am an effective teacher.
6. I am committed to serve as a teacher and since this is the assignment given to me, I have no choice.
7. I have been used to the job.
8. Teacher has a chance to be flexible and find self-fulfillment/satisfaction.
9. I can serve the Lord in this way.
10. I enjoy working with cultural communities.

Reasons for not wanting to continue

1. Difficult to teach a multigrade class. More work; more preparation; more responsibilities; job so demanding.
2. Children have limited chance to learn.
3. I would like to experience teaching a single class.
4. Lesson planning is too much work; requires a lot of time and effort.
5. Teaching a single class is easier.
6. I find difficulty in budgeting time and scheduling activities.
7. Poor results in teaching; low class performance.
8. School is too far from my home; hazardous trip to school.
9. Senior teachers should handle multigrade classes.
10. No time for professional growth; no training; destructive to health.
11. Multigrade teacher devotes much more time and effort but the pay is the same.
12. Not conducive to successful learning; I want a break; pains exceed joys.
13. Many reports; more records to keep.

Source: Miguel and Barsaga 1997, 130.

Curriculum

At the minimum, a curriculum specifies the content, sequence, and pacing of what should be taught at each grade level. The organization and delivery of the curriculum have been the subject of much criticism. Curriculum development usually takes place in the center, and the content tends to be urban and middle-class in orientation. There is frequently little teacher input to the design of the national curriculum, and often the content is too difficult or too extensive for pupils. Even when prepared and disseminated, four curriculum issues are most prominent in DMCs' efforts to improve education quality: (i) the national curriculum is not well developed, objectives are not clear, and there is insufficient articulation between grade levels; (ii) the curriculum is developed but not fully accepted by the teachers; (iii) the curriculum is clearly specified, but is too difficult or covers too much material for the available time; and (iv) the textbooks and/or teacher training are not aligned with the curriculum. These may be elaborated as follows:

- (i) *Curriculum not well developed.* The curriculum is typically developed by sets of specialists and lacks integration. Further, uncoordinated changes in teacher training, textbook selection, or examinations occur without a corresponding change in the old curriculum. Over time, instructional activities in the school can move far away from the curriculum. Instruction becomes more ad hoc, driven by the textbook or teachers' personal beliefs about what should be taught or what they are most comfortable teaching.
- (ii) *Teachers do not accept or do not receive the curriculum.* Teachers may have had little input into the objectives, content, or accompanying guidelines of the curriculum. Moreover, teachers – particularly in rural areas – may not have copies of the national curriculum or may not have updates. Whether this deficit is due to budget constraints in the education ministry or just to difficulties in communication, the impact is the same: teachers lack either the confidence or the structure and support that a curriculum can provide. As a consequence, the quality of instruction drops. Then, students score poorly on the national examination because they have not covered the material that the test assumes was being taught. This is well illustrated in Pakistan, where the Country Sector Study identified the failure of improvements, which were made in the curriculum, to reach teachers or students as a serious problem in education quality.
- (iii) *Too much to learn.* The curriculum in some DMCs is overly elaborated, requiring students to cover too much content to be effectively taught or to reasonably learn. The curriculum may develop through the slow accretion of requirements, leading to a confused and overburdened curriculum. Cambodia provides an example of an overcrowded curriculum with 12 subjects at the primary level (ADB 1996, 23). Such a curriculum leads to fragmentation in teaching and a lack of integration of content across subjects.
- (iv) *Poor alignment of textbooks with curriculum.* This often happens when textbooks are revised or changed without simultaneous attention to teacher training or when teacher training is upgraded without regard to the

textbooks that are already used in schools. Reforms to one element of the education process do not ripple through the system. Parts become unaligned. Pakistan again is an example of a setting in which textbooks do not faithfully reflect the objectives of the curriculum (World Bank 1991).

In addition to these weaknesses, the Country Sector Studies criticize various curriculum reforms taking place or being considered. The focus of the following observations is largely on changing content issues in the search for social relevance.

- (i) *Philippines*. The elementary and secondary curricula have been refocused many times in the Philippines. In the early 1980s, reforms emphasized values education to balance the child's intellectual, physical, moral, and spiritual development as a human being, a Filipino citizen and a member of the world community. Then in 1993, in response to poor pupil achievement in mathematics and science, a new program was introduced which increased time allotted to those two subjects and increased the number of school days from 185 to 200 per year. During the same year, values education was eliminated from the secondary curriculum for third and fourth year students, being replaced by additional English, mathematics, or science and technology subjects (Philippines Country Sector Study 1997, 12).
- (ii) *Papua New Guinea*. From the 1970s, "community attitudes have strongly endorsed academic content in primary schooling because of its promise for high-paying jobs. More recently, parents are aware of the scarcity of jobs in the employment sector for school-leavers and they are beginning to question the relevance of an overly academic curriculum" (Papua New Guinea Country Sector Study 1997, 21). One response to the demand for relevance in an era of technological change is the introduction of technology into the curriculum (Box 12).
- (iii) *Nepal*. Quality of education is a major concern particularly in regard to social relevance. The education curriculum needs to pay attention to the social and cultural realities, particularly of the disadvantaged group, "for example, a typical literacy programme uses books ... in the national language focused on the language and the social contexts of the politically advantaged group.... Most of the programs are not people-centered" (Nepal Country Sector Study 1997, 46).

The multiple functions of the curriculum and the breadth of issues are suggested in these quotations from the Country Sector Studies. The purposes of the curriculum, explicit or obscure, go well beyond imparting textbook knowledge. Taking a broad cultural view of the curriculum, Agarwal and Harding (1997b) observe, "If school is an entry into the culture and not just a preparation for it, then there must be constant reassessment of what school does to the young students' conception of his/her own powers (her own sense of agency developed through her own talents), and her sensed changes of

Box 12: Adding Technology to the Curriculum in Papua New Guinea

The *objectives* of basic technology include developing skills and knowledge for:

- (i) Designing, problem solving, decision making, researching and the application of information, in order to carry out practical and useful tasks in the home and community;
- (ii) Using and operating the different tools and equipment safely and efficiently;
- (iii) Understanding personal, physical, mental, and emotional growth.

The *content* is built around: health and safety, tools and equipment, working techniques, design, and materials.

The *applications* focus on: useful community technologies; water, power, and sanitation systems etc; houses and building maintenance; machines and household equipment; food and nutrition; clothing construction and household sewing; crafts; and home management.

Source: Papua New Guinea, Department of Education 1993.

being able to cope with the world both in school and after (her self-esteem). We have often become so pre-occupied with the more formal criteria of 'performance' and with the bureaucratic demands of education as an institution that we have neglected this personal and humanistic side of education."

A system of education, theory of pedagogy, or national education policy that does not promote the school's role in nurturing pupils' self-esteem fails to carry out one of its primary functions. With evidence from sub-Saharan Africa and South Asia, Agarwal and Harding (1997b) support the view that a *community of learners* approach can contribute to both performance and self-esteem, where teachers, the community, and students are all learners together, the act of teaching evolves from this shared learning, and knowledge comes about through the negotiation of meaning by the individual in a social context.

Education Governance, Management, and School Organization

Changes, some major and some minor, in education governance and management are taking place in most DMCs (Adams 2002). The roles of central, provincial, and local education authorities are being modified. At the school level, management roles are under review and new relationships between school and community are redefining the organization of schooling. The general direction of change reflects devolution of certain traditional responsibilities of the center, increased responsibilities at lower echelons of education bureaucracy, and exploration of new levels of school-community relationships.

The Country Sectors Studies report some of the changes taking place:

- (i) *Papua New Guinea*. "Community participation in education has a long history in PNG. Contributions from the community in the form of labor and local materials supported by grants from government, will enable the realization of such facilities at minimal cost" (Papua New Guinea Country Sector Study 1997, 24). "Proposals to transfer distribution functions to the provinces raise the prospect of the inherent risks for further deterioration, such as occurred with the transfer to the provincial level of responsibility for education subsidies" (p. 47).
- (ii) *Pakistan*. "The day-to-day school management, as well as the power to recruit teachers and select school sites has been delegated to district officials and communities. Also, Village Education School Management Committees have been constituted in all four provinces to ensure community involvement and mobilization" (Pakistan Country Sector Study 1997, 42). "... Plans call for strengthening the grass root structures through an 'extensive training program' which would inform communities about the functions they are to perform" (p. 44)... "In the rural areas it may be too optimistic to expect the communities to be organized and motivated to take on the management of primary schools. The attempts to devolve some provincial functions may take a long time before community-based management is implemented" (p. 47).
- (iii) *PRC*. "Community Education Committees have been established since the late 1980s in cities and Parents' Committees in rural communities, advisory organs for running schools, and to encourage all sectors of the community to support education development." Problems with decentralization include uneven development in the various school and lack of strong support for schools with poor facilities, and resources (PRC Country Sector Study 1997, 30).
- (iv) *Nepal*. Between 1951 and 1971, education in Nepal was initiated, managed, and financed at the local level, and there is a "need to devise strategies for transferring the ownership of educational institutions back to the people" (Nepal Country Sector Study 1997, 61). "Regular and effective supervision of schools are still not satisfactory ... although supervisors have been appointed at the district and regional offices. The lack of community support to education [is] because of its lack of relevance, particularly in nonurban areas – [its relevance] seems more as a way of moving from an agrarian life to an urban life" (p. 47).
- (v) *Kyrgyz Republic*. Starting with independence in 1991, there was a movement away from the traditionally centralized, controlled education system. "When the state turned over the finance and running of the educational system in the early 1990s to regional and local authorities, local budgets and resources were not ready to receive the burden. In the South there were teacher strikes since the local authorities could not pay the teachers Many professional teachers left education during the time of turmoil..." "Thus, in 1996 the educational system reverted to being supported by the state again: with a present ratio of 70 percent [of funding] from local sources and 30 percent centrally provided" (Kyrgyz Country

Sector Study 1997, 40). “Teachers, school directors and parents have begun to actively work together to improve educational quality by promoting a choice of pedagogies geared to meet the various abilities and talents of the individual students” (p. 50).

The problems encountered by DMCs, as described above, are indicative of the range of concerns arising during decentralization of education. Particularly under centralized education control, the link between senior policymakers, administrators, and student outcomes or other quality indicators is largely indirect through distribution of resources and establishment of standards rather than through any direct influence on the learning environment. The primary concern with governance and management in this booklet, however, is at the school level, which, under some patterns of decentralization, has gained considerable significance.

The importance of strong school management to teaching, learning, and effective schools is well established. As the Kyrgyz Republic Country Sector Study points out (1997, 50) “The appointment of good teachers but poor professional managers gives negative results.” Yet experiments in site-based management frequently do not produce significant change in teaching and learning. Also, visible changes are not always welcomed by neighboring or competing schools, and leadership over time requires multiple advocates. The lesson is that school-level efforts at reform are fragile, and, if not reinforced by community or regional support, may not survive.

School head teachers generally have responsibility in four areas that impact on instructional quality: (i) school management (e.g., ensuring that textbooks are available); (ii) school-ministry communications (e.g., ensuring that the national curriculum is available to teachers); (iii) school-community relations (e.g., raising money for the school, securing parental support for new instructional strategies); and (iv) instructional supervision (e.g., “internal supervision” by head teachers) (Chapman 2002). Moreover, the widespread move toward greater decentralization across Asia is thrusting head teachers into an even more prominent position, as school-level managers are increasingly expected to assume responsibilities that were previously handled at higher levels of the system. Unfortunately, few head teachers have adequate preparation for these new responsibilities.

The push toward decentralization now under way to varying degrees in virtually all countries in the region shifts more responsibility to head teachers, arguably the group of education administrators least ready to accept it (Chapman 2002). As a result, head teachers face three issues:

- (i) Many head teachers lack the training or background to meet this challenge. Across much of Asia, massive support and training will be needed if decentralized school management is to lead to positive outcomes. Whatever education value decentralization may hold is largely lost if head teachers cannot translate it into concrete actions within their school.
- (ii) Decentralization may lead to greater community pressure for transparency and accountability on the part of school and system managers. These

administrators may have limited experience in understanding what this means or in knowing how to comply.

- (iii) To the extent that decentralization shifts decision making back to the community, it may encourage or stifle education reform. However, many communities are conservative, and even well-intentioned changes to instructional materials, teaching methods, or tests can arouse considerable opposition. They may be unwilling to risk their children's future on new ideas about what students should study, how teachers should teach, or how learning should be measured. Parents and teachers may perceive change as threatening the balance of advantage. Those who do well under the existing system may resist changes that put their advantage in doubt.

Policies and Strategies for Improving Education Quality

Effective policies and strategies can be developed at all administrative and decision levels for the purposes of maintaining or improving education quality. As illustrated in prior sections, strategies may need to vary by particular social and economic context and by the developmental level of the targeted education institutions. Such conditions do not eliminate the possibility of useful national policies related to quality; they do, however, stress the crucial significance of school- and community-level analysis.

Systemic Changes and Reforms

In prior decades, many efforts in Asian countries to transform schooling and teacher behavior relied on national plans and mandates developed and administered from the center. At times, within a highly controlled administrative environment and homogenous culture, the desired changes did take place. In many cases, however, the incentives were insufficient and the reforming and restructuring processes were too complex. Changes typically were temporary. Current attempts to improve education quality in Asian countries, sometimes in partnership with international agencies, often include policies and strategies at all administrative and decision levels.

Policy 1. Strengthening the Policy and Planning Environment in the Center

As education policy and planning are decentralized in DMCs, new functions and responsibilities are being assumed by all levels of government. Nevertheless, central leadership, expertise, and financial support remain highly important for improving education quality. Moreover, ADB has identified one of its comparative advantages as its potential to provide policy guidance and contribute to the efficacy of the policy environment. More specifically, ADB and other agencies can share information, build individual and institutional capacity, and assist in development of information and communication systems and networks.

Strategies:

- *Mobilizing public concern and political support to make improvement of education quality part of policy dialogue.* Some argue that, in the long run, quality interventions affecting schooling can be self-financing if, by raising quality, the graduation cycle is shortened and the costs per graduate are reduced (ADB 1996). However, education changes

that cannot offer short-term results are rarely favorite investments for governments or international agencies. Moreover, since quality intervention often requires additional resources, those who lose in the transaction may see quality improvement as secondary to what they value. Improving education quality, thus, is as much a political process as a technical one. Initial actions to improve quality may require national campaigns to inform the population, recruit better teachers, and involve communities. Seeking higher school quality can become a popular cause if costs are not excessive.

- *Capacity building of institutions and processes evolving through patterns of decentralization.* The wave of decentralization in Asia may shift problems of financing and quality control downward to individuals less well-equipped to deal with them effectively. Developing the knowledge and skills among teachers, head teachers, and community leaders in how to raise school quality will be a dominant challenge of the next decade. Currently, large-scale training efforts are occurring in countries where devolution of education responsibilities are advanced, such as the PRC, and efforts are beginning in countries in earlier stages of decentralization, such as Indonesia. However, a prior condition to effective education decentralization may be the capacity of local governments. The Panchayati Raj initiative in India provides an example of a national reform viewed as central to continuing social sector reform that is expected to strengthen local participatory governance and revitalize local schools.
- *Restructuring mid-level administration.* Decentralization may impact negatively upon quality by increasing the difficulty for national governments to influence school quality through any concerted central action. The involvement of intermediate levels of administration in upgrading school-level quality may become crucial. This level frequently acts as a gatekeeper in transmitting information about local actions upward and information about national policies downward. New functions at provincial and district levels may include: (i) facilitating communication and exchange networks; (ii) better utilization of supervisors and supervision; and (iii) feedback to schools of analysis of data forwarded from the school level.
- *Providing management training for new roles.* Two assumptions run through much of the discussion of education quality: (i) teacher quality – if defined in terms of subject competence, pedagogic skills, intelligence, empathy, and artistry – potentially has a powerful influence on student learning; and (ii) teacher quality is nurtured by specific school conditions such as (a) administrative encouragement of school improvement, teamwork, and collaboration in planning and problem solving, and (b) risk taking in innovative practices.

If the local community and school become the focal point of much of the planning and action related to education quality, then the role of the head teacher is radically changed. The role traditionally has emphasized maintenance of administrative control, performance of administrative routines, and commitment to rules for problem solving.

The emerging role may include multiple goals, a focus on facilitating change, mobilizing community education efforts, utilization of evaluation and professional sources of information, and supervising instruction.

The focus of a training program in the Philippines provides a useful example. It prepares school managers for decentralization, and is indicative of the potential new demands placed on principals by decentralization. The training program, which stands in marked contrast with training devoted to routine administrative tasks, includes such areas as: management of change; instructional leadership; communication management; crisis management; problem solving, resourcing, and decision making; decentralization; performance accountability; values development; physical facilities management; and administrative discipline (Philippines 1996).

- *Delivering quality education in peripheral areas.* In several countries, populations of significant size remain without access to basic education in any acceptable form. The problem of unequal access to schooling involves not only girls but also the rural and urban poor, linguistic and ethnic minorities, and populations in remote areas. This situation is particularly acute in Bhutan, PRC, India, Indonesia, Nepal, and Pakistan, and in certain island populations in Indonesia and the Philippines. Provision of increased education opportunities to this population will be relatively costly and will test the seriousness of commitment of both governments and international agencies to quality education for all.

Table 12 identifies teacher-related policies addressing their potential needs and concerns when working in peripheral areas. These policies have general relevance for teacher development throughout South and Southeast Asia but take on special significance in rural and remote areas. Feasibility and acceptability of any given recommendation found in Table 12 vary significantly across communities.

Policy 2. Developing and Implementing a Well-Designed Curriculum

Perhaps one of the simplest and least expensive actions that could be taken over the next decade to improve education quality in DMCs is to ensure that all teachers have and know how to use a well-designed curriculum and correlative textbooks for the grades they teach. One approach to the implementation and coordination of new curricula and related changes is through a national instructional strategy prepared by national or provincial authorities with input from local administrators and teachers. Included would be a set of guidelines and action plans related to the use of instructional time, development of instructional materials, and instructional support roles of head teachers and others.

Table 12: Policies Addressing Teachers' Needs and Concerns in Relation to Work in Peripheral Areas

<i>Teacher needs/ Policy area</i>	<i>Economic considerations</i>	<i>Organizational support</i>	<i>Professional development</i>	<i>Social considerations</i>
Teacher recruitment	<ul style="list-style-type: none"> Put basic teacher salaries in periphery at parity with urban areas. Provide salary differentials and/or hardship pay for teaching in difficult areas. Provide incentives to high-ability local youth to become teachers in their own communities. 	<ul style="list-style-type: none"> Development of community-school councils for local recruitment of teacher candidates. 	<ul style="list-style-type: none"> Provide subsidized preservice teacher education for local teacher-education recruits (scholarships, special tutoring, etc). Develop programs for school-based education/certification of locally recruited teachers. 	<ul style="list-style-type: none"> Develop programs to increase teachers' social status and recognition. Recruit local students who are already familiar with language and culture.
Teacher education	<ul style="list-style-type: none"> Subsidize preservice teacher education for recruits from peripheral areas. Subsidize teacher enrollment in courses for earning/upgrading credentials. Associate teacher education with credentials, pay raises, promotion, and job security. Subsidize costs of in-service teacher education. 	<ul style="list-style-type: none"> Empower and train school principals as instructional leaders/supervisors. Enroll teachers as a group in distance-education programs so they can support one another. 	<ul style="list-style-type: none"> Make sure that preservice teacher education covers problems of teaching in peripheral areas; relevant language instruction; lessons on school-community relations. Hold some student-teaching activities in peripheral schools or in conditions simulating those in schools in the periphery. 	<ul style="list-style-type: none"> Use distance/extension education programs so that teachers can upgrade credentials without too much disruption to family life.
Teacher deployment	<ul style="list-style-type: none"> Offer extra credit toward promotion for teaching in peripheral areas. 	<ul style="list-style-type: none"> Use school-community councils to select teacher candidates; could also have monitoring, follow-up, and orienting roles for new teachers. Create organizational mechanisms to ensure that teachers recruited and trained for work in the periphery are indeed placed there. 	<ul style="list-style-type: none"> Provide special preparation for teaching in the periphery prior to teachers taking up assignments (including training in multigrade teaching and working under difficult conditions). 	<ul style="list-style-type: none"> Develop means of overcoming the image of social isolation. Develop strategies to support deployment of husband/wife teams. Offer subsidized housing as part of teaching contract. Cover moving costs to remote locations.
Teacher retention	<ul style="list-style-type: none"> Payment of overtime for extra work/preparation. Improved management of automatic promotion systems (eliminate paperwork bottlenecks). Community contributions toward teacher welfare/earnings. 	<ul style="list-style-type: none"> Organize school clusters and/or working groups for peer support and group problem solving. Empower teachers as co-developers of school curriculum and in-service education programs. Solicit community for teacher aids and guest instructors. Promote special recognition of teachers by community. Use decentralized systems of resource (e.g., textbooks) provision and distribution. 	<ul style="list-style-type: none"> Provide access to teacher education/teacher upgrading courses (through distance or extension education). Make in-service teacher education relevant to teacher needs in the periphery. Involve teachers/teacher groups in the planning and implementation of their own in-service education. 	<ul style="list-style-type: none"> Maintain housing subsidies. Cover costs of occasional "home visits" for those not originating in school vicinity. Provide assistance for health care and education of family members.

Source: Tatto 1997, 161-2.

Strategies:

- *Developing and disseminating effective learning materials including, but not limited to, textbooks.* Textbooks and supporting instructional materials are widely regarded as the single most important input to raising student learning, especially in countries in which large numbers of teachers are unqualified or underqualified. Textbooks identify, sequence, and pace curriculum content. Thus, good textbooks if effectively used in the classroom, can partially offset weak teacher preparation. Problems in many DMCs persist in all stages of the development, dissemination, and utilization of textbooks and instructional materials. A further problem is that textbook production or distribution projects frequently need to include more attention to teacher training, an extra cost that is too often overlooked in the planning and budgeting stage.
- *Developing and implementing a valid, reliable examination system.* A popular claim of education reformers in both developing and industrialized countries is that improving national (or state) testing systems integrated with the national curriculum is an important, perhaps a key, strategy for improving education quality (Capper 1994; Lissitz and Schafer 1993; Mitchell 1992; Murphy, Greaney, Lockheed, and Rojas 1996; Popham 1987, 1993). For example, in Pakistan the World Bank (1991) argues that no other investments designed to raise the quality of schooling (changes in teacher qualifications, curriculum, education materials, teaching methodologies, equipment, physical facilities) are likely to result in lasting improvement until the national examination system is improved. In principle, national examination systems can (i) ensure that investments to raise quality are paying off, and (ii) identify locations where low quality persists in order to target resources and remediation. A common means of doing this is through large-scale objective testing of student achievement. Objective tests are widely regarded as the cornerstone of merit-based education systems. In principle, such examinations level the playing field in the allocation of opportunity by minimizing the direct influence of family connections, wealth, and patronage in measuring student performance. Advocates argue that tests are the fairest means of comparing individuals, in that all the test takers are presented with the same task and scores are assigned without regard to the identity of the test taker. Moreover, they provide a means of comparing large groups of individuals at relatively low cost per person (Chapman and Snyder, in press). Perhaps most importantly, high stakes tests are one of the few elements of an education system that are controlled at the central level of the system, but that have direct impact at the classroom level.

For all the benefits, the examination development procedures of most countries are labor intensive, expensive, and time consuming. Such tests do not assess some important areas of student growth. The content and type of items on national examinations do not change quickly. Moreover, introduction of new materials or teaching practices in schools can throw instruction out of alignment with these tests, to the disadvantage of students and the anger of parents (Fuller

and Holsinger 1993). Any change in testing that changes the distribution of advantage within a society tends to incur the wrath of those who see their advantage slipping. Hence, testing procedures are driven by politics as much as by psychometrics.

- *Establishing national guidelines and standards of quality for all.* The issue of monitoring learning achievements in regular and systematic ways must receive more urgent attention. Strategies for continuous assessments and recording of individual children's mastery of basic competencies (essential learning competencies) may need to be supplemented with standardized education audits between and within countries over time (Irvine 1997, 28-9).

National standards are potentially significant for improving teaching and learning. To be effective, such standards must have sufficient supporting resources for accompanying teacher training and be well integrated with curriculum and textbooks. Developing and sustaining such integrated reforms over time will require teacher commitment and managerial initiative. If a consensus can be developed on standards for student achievement and their assessment, and if the standards are applied appropriately in schools all over a country, then the groundwork has been laid for systemic change (Adams 1998, 37). National standards in education are often controversial because of technical difficulties of measurement, disagreement as to dimensions of quality, and punitive application. Such standards do not, of course, eliminate the need for school-level standards.

Policy 3. Strengthening Research, Innovations and Development

Research is ahead of practice. Although much is now known about conditions and factors that build and sustain quality education, education policies and practice are too rarely informed by the insights research can bring. All Country Sector Studies report active research units as part of, or affiliated with, the education bureaucracy. National research centers can provide leadership in mapping and implementing research and development programs to improve education quality. They can also disseminate information on strategic implications of existing research and exemplar practices on education quality, assist in developing school-level instruments to monitor school quality, and participate in development of national and cross-national efforts to improve education indicators.

Strategies:

- *Learning from governance and funding changes.* The range of education governance and funding arrangements in DMCs continues to grow. These reforms and innovations can yield insights to provide directions for the coming decade. The trend toward increased privatization is a case in point.

Potentially, privatization can bring many benefits. Privatization in delivery of education, now widespread in Asia, can increase the total resources available for education. Flexibility of private management

may lead to innovations that result in higher-quality schooling. Cost sharing may contribute to a feeling of partnership in the education enterprise, thereby influencing quality. But privatization can also contribute to higher rates of dropout due to the financial burden on families. It can contribute to greater regional inequities, as parents in poorer areas are not able to contribute as much as parents in other areas. As a new or expanded policy choice, as in the countries from the former Soviet Union and in parts of South Asia, privatization is a reform to be monitored and evaluated over time. Feedback may lead to new public-private partnerships. Privatization need not mean that governments necessarily relinquish their leadership roles in attempting to deliver quality education to all children and youth. One essential question, however, is how governments can influence the quality of instruction in schools they do not support financially. In Bangladesh, for example, where half the primary schools and nearly all the secondary schools are nongovernment and privately financed, the Government has little leverage to induce quality improvement activities. How central governments can encourage local school improvements as the diversity of secondary school financing and management widens is an uncharted area.

- *Encouraging school- and classroom-level experimentation.* Research and experience indicate that much remains to be learned about the behavior of schools and the teaching-learning process. More insight needs to be acquired by examining, at the community and school level, cases of success and failure. This lack of knowledge suggests the importance of continued experimentation with new curricula and new delivery mechanisms. One problem is that the poorest countries and poorest education systems, which arguably need innovations and cost-effective teaching and learning the most, have the least fiscal and human resources to invest for such purposes.

Across developing Asia, there has been experimentation with alternative organizational structures intended to improve quality, reduce costs, or both. For example, the Philippines has made widespread use of multishift classrooms to reduce the demand for new facilities (Miguel and Barsaga 1997). Cambodia, Indonesia, and Thailand have instituted effective cluster school arrangements, linking less well-resourced schools to more centrally located, better-resourced schools (Irvine 1995). Papua New Guinea undertook substantial reorganization of teacher education institutions (Avalos and Koro 1997). Kazakhstan is substantially reducing the size of its central ministry. Each initiative is justified in terms of how it will both save money (or at least contain cost escalation) while improving quality.

- *Collecting and processing of data useful for improving the learning process.* Typically, data collected at the school level on teachers or students are for administrative and planning purposes at higher levels of administration. Occasionally there is feedback to schools of data analyzed at district, provincial, or national levels to inform head teachers of the efficiencies of their schools. Useful as such feedback may be in the administration of schools, it does not in any direct way

affect the teaching-learning process. Curiously, the information system – or series of flows of information – that informs classroom teaching may be rather informal. Research by Adams and Boediono (1997, 248) in Indonesia describes a “loosely organized chain of pedagogic and disciplinary expertise extending from the provincial level to the school level, which is composed of supervisors, designated expert teachers in their disciplines, in-service teacher training instructors, and classroom teachers.” Thus, the flow of information most directly linked to the teaching-learning process tends to be qualitative and frequently part of informal communication.

Research centers can assist in defining and subsequently analyzing two basic types of information that are needed for school-level planning for improving education quality:

- (i) *Information on school context.* In addition to the usual school demographics, attempts to improve school practice require information and analysis of those features of the internal and external school environment that impact on school management and classroom dynamics. Education environments vary, not only in terms of resources and other school inputs, but also in school outputs and outcomes. Additionally, communities and schools vary in the sociology and politics of information use. Contextual data can be used to help illuminate blind spots and answer the question: “In what ways can this school practice work?”
- (ii) *Information on instruction and learning.* An information system, if it is to contribute to the improvement of school practice, should at least assist the teachers in deciding what to do and think (Sarason 1971). As concluded by Chapman and Mählck (1993), teachers need information (and teachers are, themselves, sources of information) about what they are expected to achieve with their students, how much instructional material is or will be available, what they are expected to teach, and the most effective pedagogic practices.

Developing More Effective Teachers and Teaching

Special attention in terms of policy and strategies is given to teachers because of their centrality in attaining and maintaining quality education. Some of the issues and responsive strategies are peculiar to given levels of education or types of institution. Others have relevance to the primary, secondary, and tertiary levels of education.

Recruiting well-qualified individuals into teaching, providing them with relevant training, and providing incentives for effective job performance have been the cornerstone of DMCs’ goals for improving education. A common concern across many DMCs is that teaching is considered a low-status career. Moreover, well-qualified teachers may have increasing alternative employment opportunities in other sectors of the economy. Consequently, recruitment of

qualified personnel into teaching has become more difficult, a problem not likely to change in the near future. In some South and Southeast Asian countries where salaries are borderline with the basic costs of living, the only intervention that would have a dramatic impact on the rate and quality of those recruited would be a significant salary increase to make teaching comparable with other job opportunities. Short of this, in these settings there are few dramatic interventions that can make much difference; recruitment will improve only as many smaller adjustments are made to enhance the quality of teachers' work life and conditions of service.

Policy 1. Strengthening Teacher Preparation and Upgrading

Probably the best insights into workable training programs for teachers reside with a few teachers and other education professionals in the particular countries where such training was implemented and evaluated. Unfortunately, regional, or at times even national, dissemination of such experience is not common. Strategies and policies for initiating and sustaining quality improvements will depend on the assumed or explicated meaning of quality. However, the broad-ranging research on school effects and effective schools offers some insight that could become part of in-service, school-based training programs for teachers and head teachers or school cluster-level innovations. All policies to improve the quality of teachers and teaching need to be integrated into any existing instructional policy and strategies for the improvement of schooling.

Strategies:

- *Restructuring teacher preparation.* Typical strategies for improving teacher preparation and upgrading include extending the length of preservice general education, increasing the development of teaching skills during preservice education, and maintaining continuous school-based in-service training. However, upgrading teacher training is, worldwide, the single most popular strategy for improving education quality. At the same time, teacher training is one of the most expensive interventions a country can undertake. In the Lao PDR, the unit cost in teacher training institutions is almost seven times higher than in ordinary secondary schools (Mingat 1996). Worldwide, the per-pupil cost of teacher training colleges can be as high as 25 times the per-pupil cost of general secondary schooling. The recurrent costs of training, already high, increase another 50 percent when programs increase from two to three years (Fuller and Holsinger 1993; Lockheed and Verspoor 1991).

Existing preservice teaching arrangements do not appear to be very good investments. In-service training programs as usually delivered also appear to have little impact on teacher performance. There is wide agreement that for teaching at the basic education level teacher preparation should include adequate general education (10 years to full secondary) and that effective training programs include two key elements: (i) alignment of teacher training with the curriculum that graduates will be expected to teach, and (ii) supervised practice teaching. However, less agreement can be found on the processes

and outcomes of training. Advocates of more participatory styles of training suggest that a key objective should be to raise the motivational level and self-reliance of teachers. The reported success of locally focused training programs in South Asia suggests that this model is worthy of further experimentation.

- *Continuous staff development.* Student teachers and practicing teachers need to be given the opportunity to acquire a repertoire of teaching strategies and skills to be effective practitioners. A move in this direction shows the value of greater involvement of teachers in organizing their training and provision of greater flexibility for teachers together with head teachers to organize teaching and learning in the school. Staff development may benefit from devolution of training to individual schools and stronger participation by local government and community organizations. Other innovations could include the use of senior teachers in the professional development of other teachers (as in Indonesia), the use of school cluster resource centers to bring training closer to the classroom (as in several Southeast Asian countries), and linking certification and licensing to specific skills acquisition.

Policy 2. Developing Incentives for Teachers

Among the key issues for the next decade is the need to design better teacher incentive systems. The prospect of identifying low-cost incentives to motivate teachers to perform in new or better ways has a powerful appeal to countries caught in the squeeze of simultaneous declines in education quality and resources (Chapman, Snyder, and Burchfield 1993). Table 13 highlights incentives that have been used across many countries in attempts to encourage better teacher performance (Kemmerer 1990). Among the three types of incentives, remuneration has received the most attention.

The weight of the research suggests that after acceptable salary levels have been reached, the overall quality of work life, rather than any particular reward, is the important factor motivating teachers. The challenge, then, is in identifying and implementing an effective mix of benefits. While this mix varies from country to country, considerable effort can be saved by cross-national sharing of information on what works.

Strategies:

- *Initiating realistic incentives.* As a practical matter, incentive systems are surprisingly difficult to operate, for six reasons. First, to be effective, rewards have to be directly and immediately paired with the desired behaviors. Instructional supervision in many DMCs is the responsibility of supervisors outside the school itself (e.g., district education officer, school inspector) and the pairing is often too loose and too late. Second, the belief that incentives can lead to improved teaching assumes that teachers are capable of better pedagogic practice than they normally exhibit. That assumption remains to be tested in each context. Perhaps teachers are doing the best they can. While they would probably appreciate the rewards, it is not clear how

those rewards would lead to better performance. Third, the incentive value of rewards changes over time. When a reward is widely received, it becomes an expectation and eventually an entitlement. Failure to receive the incentive can, at some point, be viewed as a punishment and hurt the very morale it was intended to bolster. Fourth, incentives can be demoralizing to those who do not receive them. Research suggests that incentives can increase teachers' job satisfaction which, in turn, may improve teacher retention, but they do not necessarily change classroom teaching performance. Fifth, as in all innovations, the impact of the system should be kept in mind. Team

Table 13: Types of Teacher Incentives

<i>Remuneration</i>			
<u>Monetary</u> <ul style="list-style-type: none"> • Salary • Beginning salary • Salary scale • Regularity of payment • Merit pay • Materials allowance • Cost of living allowance • Hardship allowance • Travel allowance 	<u>In-kind supplements</u> <ul style="list-style-type: none"> • Free or subsidized housing • Free or subsidized food • Plots of land • Low interest loans • Scholarships for children • Free books 	<u>Benefits</u> <ul style="list-style-type: none"> • Paid leave • Sick leave • Maternity leave • Health insurance • Medical assistance • Pension • Life insurance • Additional employment • Additional teaching jobs (e.g., adult education) • Examination grading • Textbook writing • Development projects 	<u>Bonuses</u> <ul style="list-style-type: none"> • Bonus for regular attendance • Bonus for student achievement • Grants for classroom project
<i>Instructional support</i>			
<u>Materials</u> <ul style="list-style-type: none"> • Teacher guides <ul style="list-style-type: none"> – on time – in all subject areas – in appropriate language • Student textbooks <ul style="list-style-type: none"> – on time – in all subject areas – in appropriate language • Classroom charts • Science equipment • Copy books • Pencils • Chalkboard • Safe storage for materials 	<u>Supervision</u> <ul style="list-style-type: none"> • Observation • Feedback • Coaching 	<u>Teacher Training</u> <ul style="list-style-type: none"> • Classroom management • Materials use • Lesson preparation • Test administration 	<u>Career opportunities</u> <ul style="list-style-type: none"> • Senior teacher • Principal • Supervisor
<i>Working conditions</i>			
<ul style="list-style-type: none"> • School facilities • Classroom facilities • Number of students • Age range of students • Collegiality 			

Source: Kemmerer 1990.

and school performance rewards may take precedence over individual-based merit systems. Sixth, any scheme of incentives should be developed with the participation of the teaching community.

- *Enhancing salaries and other compensations.* Teacher salaries may account for 90 percent of recurrent budgets for basic education. Under conditions of fiscal crisis or economic downturn, policies of structural adjustment, or policies of reduced public expenditures on education, teachers' compensation and status are likely to be adversely affected. Interpretation of teacher salaries should take into consideration the relative scarcity of teachers in a particular context. However, at the minimum, the salary must be a living wage.

In many countries teachers' salaries are tied to civil service salaries. Can the former be separated from the latter? Many sources suggest this step as a basic strategy to improve salaries. Farrell and Oliviera (1993) offer three reasons why teachers' salaries should be delinked from civil service salaries: (i) if linked, all teacher salary reform would be part of civil service reform; (ii) the motivation and incentives for teaching may not be the same as for the civil service; and (iii) delinking allows for separate career ladders. A second popular recommendation is to delink salaries from advanced (official) qualifications since there is little evidence that advanced qualifications lead to increased productivity. "In Nepal the highest ranked primary-school teacher [two years of university training] earns about 60 percent more than the lowest ranked teacher [who has not gone beyond lower secondary school]." In some countries teachers with the highest certification earn several times more than new teachers.

Developing and Sustaining High-Quality Education Institutions

The goal of every DMC is an articulated education system of adequate quality. The specific objectives and targets related to this goal must be interpreted in terms of the stage of development of the education system, economic conditions, and social priorities. The interdependence of institutional levels of the system suggests the need for an integrated approach to quality improvement.

The education and social functions of primary, secondary, and tertiary education overlap but vary significantly. Many of the issues related to improving quality apply to all levels of the education system, including the need for: training that produces well educated, technically competent instruction; incentives that reward performance; adequate salaries to discourage moonlighting; adequate learning materials; continuing staff development; increased staff productivity; management designed to give instructional support and leadership; and national and institutional monitoring of standards. Moreover, quality improvement at any level is interrelated with and, at least indirectly, dependent on supporting changes at other levels. Improving education quality must address the behavior of the whole education system.

Policy 1. Developing an Integrated System of Quality Preprimary Education through Basic Education for All Children and Youth

Experimenting with organizational change, there are organizational issues and choices with consequences for quality and cost. Of particular relevance to the learning outcomes of children are the differences across countries in number of years of the basic education cycle, school starting age, and composition of curriculum. There is nothing magical about six or nine years of compulsory education, a school starting age of six years, or a school program which typically gives little recognition to the external environment and the world of work. The common organizational trend, as economic resources and education development allow, is to extend basic education from six to nine years encompassing primary and middle schooling. Increasingly in the educationally more developed DMCs, there is discussion and debate regarding the priority to be given to preprimary education. The positive impact of preprimary education on the performance of children in the early primary grades is well documented. Typically, however, if faced with a choice between expansion of preprimary education and expansion or improvement of primary education, policymakers have chosen the latter. Possible experimental redesigns of basic education would include socialization and readiness training to four- and five-year-olds. Looking into the longer-term future, is it possible also to envisage a redefinition of basic education that begins with universal preprimary education?

Strategy:

- *Concentrating resources on implementation at classroom and school levels.* New programs or projects, national or local, domestically funded or in partnership with international agencies, tend to pose more problems in their implementation stage than in their development stage. Those designed to improve quality are no exception. Indeed, since many such projects involve significant changes in behavior, more difficulty may be expected. At least two basic conditions are necessary for successful implementation: (i) stakeholders agree on need and acceptability of the new program or project; and (ii) local parents, teachers, and other stakeholders have an understanding of, and commitment to, the changes.

Policy 2. Developing High-Quality Secondary and Tertiary Education

The quality of secondary and tertiary education in DMCs ranges from world-class universities to institutions that are ill housed, inadequately staffed, and have few institutional resources to support instruction. All DMCs need effective secondary and tertiary education. Those countries which have largely achieved universal basic education, East Asian countries, countries from the former Soviet Union, and some Southeast Asian countries, are more likely to give priority to the demand for upper secondary and tertiary education. (Although some tertiary institutions, because of the political power of clientele, have always held a privileged status).

Strategies:

- *Balancing equity and quality.* In many DMCs, given the history of elitism of upper secondary education and higher education, the relations of equity and quality take on a special meaning. The appropriate balance of equity and quality may be at the core of many policy debates and may be the subject of public discourse. At the minimum, typically required will be improvement of admissions examinations and establishment of minimum criteria for types of public institutions. Within the context of admissions, defensible indicators of student ability and student interest also need to be constructed. National professional and academic standards, and institutional standards developed by each institution, may need to be developed and maintained.
- *Linking quality to relevance.* The meaning of relevance is typically a subject for debate at all levels of education. To some stakeholders relevance and quality are synonymous. At the secondary education level relevance has often meant some form of vocational education. At the tertiary level relevance may imply a technical orientation or the modernizing of content in traditional professional programs. Typically at both levels relevance implies a relation to employment.

The challenge is deciding which knowledge, skills, and values are best taught in work settings and which in “academic” settings. The Country Sector Studies report that much experimentation is taking place in linking education and the world of work. The sharp distinctions that have sometimes been drawn between education and training are becoming blurred. Perhaps in the future the distinction will disappear.

Management of Teaching and Learning

Effective schools start with effective school-level administration. In DMCs, new management roles are evolving that directly impinge on quality instruction and learning. School head teachers generally have responsibility in four areas that impact on instructional quality: (i) school management, e.g., ensuring that textbooks are available; (ii) school-ministry communications, e.g., ensuring that the national curriculum is available to teachers; (iii) school-community relations, e.g., raising money for the school and securing parental support for new instructional strategies; and (iv) instructional supervision, e.g., internal supervision by head teachers (Chapman 2002). Moreover, the widespread move toward greater decentralization across Asia is thrusting head teachers into an even more prominent position, as school-level managers are increasingly expected to assume responsibilities that were previously handled at higher levels of the system. Unfortunately, few head teachers have adequate preparation for these new responsibilities.

Policy 1. Redefining Management Roles

To raise the quality of teaching and learning at the school level, new school-level management roles are evolving, and low-cost alternatives to current practice are being explored. The traditional role of head teachers focuses on routine administrative tasks. New functions may include instructional leadership; community liaison and mobilization; stimulating and monitoring innovations (e.g., multigrade classrooms, teacher assistants); generating, understanding, and utilizing information on interventions in progress; and responding to the emergence of new priorities.

Strategies:

- *Developing effective school leadership and a safe learning environment.* School principals and supervisors accustomed to narrowly defined administrative tasks will need to take greater initiative. However, new leadership skills can be acquired only under certain conditions.

Cummings (1997) recommends three strategies to develop more effective leadership in management and supervision:

- (i) *Change the span of control.* A major obstacle in most DMCs to the quality of supervision is the heavy load assigned to supervisors, and the physical difficulties that stand in the way of their reaching schools. Cummings describes a reform in Malaysia that transferred many of the supervisory functions to more localized division offices. "The division offices, staffed with up to three supervisors, in turn related to cluster principals. The reform added a level in the organizational hierarchy but reduced the number of units, or span of control, for each level to an average of ten units: ten clusters per division, up to ten divisions per provincial office. This arrangement significantly improved communication" (Cummings 1997, 230);
- (ii) *Strengthen horizontal linkages.* Another strategy of management reform is to open up horizontal linkages so that the more effective schools have an opportunity to share their wisdom (and other resources) with their neighboring schools (p. 230); and
- (iii) *Train principals to assume greater initiative.* Additional training, even if relevant, to impact on quality improvement requires further conditions. Cummings argues "... training programs are not guaranteed to have the desired impact if they are not accompanied by other changes which actually empower principals, altering their status from that of last-line implementor of central decisions to first-line innovators of a flexible and responsive system. In the absence of empowering reforms, principals may consider the lessons hollow in that they are at the bottom of a large hierarchy and everything they initiate is ultimately subject to review. If they do well, they will be ignored. If they do poorly, they will be sacked!" (p.230).

Another strategy to improve the learning environment is to select more female teachers and administrators. Lee (2002) documents the many obstacles to gender equity in school access and the inequities in professional opportunities. Is there a link between gender of teachers and administrators and school quality? The earlier reported research in Pakistan by Warwick and Reimers (1995) and in India by the World Bank (1997) suggests that, under certain conditions, female teachers may be more effective.

- *Providing adequate direct instructional time.* International research strongly supports the notion that “time on task” leads to higher student achievement. The amount of instructional time students encounter is determined by the length of the school day, scheduling of the school year, teacher attendance, and student attendance. The length of the instructional day and school year are the most directly amenable to policy and regulation. However, changes to existing practice generally have consequences for teacher compensation and facilities’ use that, in turn, create other issues. Strategies to ensure full student and teacher attendance are harder to implement and often require a community-wide effort.

In some countries the amount of learning time outside school may be the key to high student achievement. As noted by Lee (1997, 95-6) “Foreign assumptions that the longer school year is a factor in the higher achievement of East Asian students has led educators in other countries to recommend an increased number of school days for their systems. Korean primary schools (grades 1-6) offer less instructional time, especially at lower grades, than do western primary schools. Pupils in Korea spend only 66 percent of the time French pupils spend, and 75 percent of the time spent by British students; the gap narrows at upper grades.... Korean students’ high achievement is not because they study long hours in school, but because they study long hours at home....” The significance of out-of-school private tutoring has also been addressed by Bray (1999).

- *Providing instructional leadership.* One strategy in improving teacher competence on the job, other than in-service programs, is “internal supervision” provided by head teachers with appropriate training. Research in Thailand by Raudenbush and Bhumirat (1991, 36) concludes that “There is clear evidence of a link between the intensity of internal supervision a teacher receives (supervision provided by the principal or by designated teachers) and the academic achievement of that teacher’s students.” The researchers added that there is equally strong evidence that students view teachers receiving such supervision as providing higher quality instruction than teachers with less supervision.

A related study in Thailand using observational and interview techniques supported the above findings. Wheeler et al. (1997) found that in several of the most effective schools, regular internal supervision was a critical component in the school principals’ strategy to create and sustain a strong academic focus. Such schools were char-

acterized by an “ethos of improvement” that encouraged teachers, to come to school on time; to provide academic instruction in the afternoon as well as the morning; to use test results to evaluate instruction; and to discuss teaching and learning during lunch breaks. In some schools, principals who were effective at encouraging such an ethos were also active in mobilizing community resources to purchase instructional materials and in identifying resources at the district level that could support academic learning. In these settings it would be hard to imagine effective leadership without classroom supervision, but it is also clear that supervision is linked with a broader constellation of strategies for supporting the academic mission of the school. Identifying appropriate in-service courses could certainly fit into such a constellation, but field reports suggest that the locally generated improvement efforts of which supervision is a crucial element contrast with traditional approaches to in-service education, which too often emphasize a top-down orientation in which instructions “transmit” knowledge to the teachers. Though this sketch of the meaning of the “supervision effect” is somewhat speculative, it warns against a mechanical application of the practice of supervision divorced from the “ethos of improvement” that supervision can both reflect and reinforce (Raudenbush and Bhumirat 1991, 37-8).

- *Mobilizing community resources, developing school-community linkages, and putting community-oriented education into practice.* Parents' investment in children's education is perhaps the most powerful intervention for enhancing learning achievement. This investment in time and money continues to affect children's learning while they are in school (World Bank 1997, 89). Some head teachers, teachers, and school committees are highly successful both in developing school programs that support community interests and in mobilizing community human and fiscal resources to support teaching and learning (Bray 2000).

As identified in Table 14, head teachers can influence a wide range of school-community interactions. Head teachers can assist one of the most powerful interventions for enhancing learning achievement by encouraging households to provide a supportive home environment. At a different but equally important level is a truly community approach to education planning. Among the potential advantages of closer linkages of school and community is the possibility for more involvement of students, teachers, and parents in data collection, verification, analysis, and use organized as an interactive process. This may be seen as part of a local process of inquiry which, itself, is part of a process of sustaining improvement.

Table 14: Difference Between Centrally Controlled and Community-Oriented Approaches

Domain	Centrally controlled education system	Community-oriented education systems
School-community relations	Schooling mainly the domain of professionals; limited roles for parents and community.	Education as partnership; collaboration between government and community in goal-setting, supporting, and monitoring; school supports community development and vice versa; community collaboration in school construction and upkeep.
School-language policies	No first or second language support; children are placed in mainstream classrooms with native speakers of the official language as the instructional medium; mainstream culture stressed at the expense of nondominant cultures.	Based on particular needs of communities. If a community expects native language instruction, bilingual programs are offered. If a community expects official language instruction, modified immersion programs are offered with continual second-language support and bilingual teachers and bilingual curriculum. All cultures stressed.
Curriculum	Standardized curriculum preparing children for standardized exams; exclusive emphasis on urban and industrial lifestyle, images, cultural values; the prescribed textbook as the de facto curriculum.	Local and regional themes prominent in curriculum; representation of cultural realities, lifestyles, and images of peripheral groups, as well as mainstream cultures.
Teacher policies	Standardized systems of teacher recruitment, training, and professional support.	Selective recruitment of locals into teaching force; training adapted to circumstances; local organizational support and teacher access to professional development through distance or school-based education.
School/classroom organization	School/classroom organization based on industrial model/age grade emphasized.	School/classroom organized "family style" using flexible time and space, teacher resourcefulness, student tutoring and self-instruction, and community support as assets.
Management system	Top-down management oriented toward control and efficiency, characterized by standardized rules, regulations, and resource allocation formulas; centralized procurement and distribution.	Management starts with needs of the community; resource allocation based on need, includes community-generated resources; local procurement.

Source: Nielsen and Beykont 1997.

Monitoring and Sustaining Quality Improvement

To help monitor and sustain continual improvements, there is need at all levels but particularly at the local level for both practical technology and, within contexts of decentralization, for participatory decision processes. Head teachers, in order to provide leadership and mobilize community support, should be able to assess the quality of their schools and utilize such information in local strategic planning.

A Technology for Assessing and Monitoring Education Quality

Improving quality and efficiency at the classroom and school levels suggests, at the minimum, information on teaching and learning conditions and potential. One approach to building a supporting information base is to develop easily quantifiable indicators at the school level and largely ignore classroom dynamics and intricacies of environment. Several different evaluation and monitoring schemes of varying complexity are currently being used in a number of developing countries (Heneveld 1994; Horn 1992).

To acquire a perspective on the utility of school-level monitoring and evaluation schemes, two approaches may be contrasted. In one approach, indicators for assessment of school quality are built on information and data that are relatively easy to collect. For example, checklists may be prepared by the ministry of education to reflect the government's interpretation of the basic requisites for schooling, for example adequate facilities, availability of instructional materials, qualification of teachers, etc. These lists may be adapted by school committees, teachers, and community representatives to include local priorities and preferences. They do not, of course, offer deep insight into the meaning and implications of the conditions observed. Nevertheless, such indicators may provide benchmarks that encourage worthwhile improvements.

To provide a sharp contrast with the example above, assume that a given school wanted to improve language achievement. The use of some simple checklist of the presence or absence of readily visible conditions that are assumed to be significant to school practice might still be possible. However, a more technical approach would be to reach into the sciences of pedagogy and language to obtain: a list of precise determinants of language achievement; analytical tools to interpret the distinctive learning characteristics of the particular students; and criteria for the choice of instructional technology by the teacher to be used in any given situation (Adams and Boediono 1997).

In the first approach, many of the basic limitations of typical national indicator sets are repeated at the local level. Perhaps such lists should be best seen as providing information more useful for informing a process of discussion and debate than offering a clear course of action for improving practice. Although this "checklist" approach maybe faulted for being too unsophisticated, the latter approach appears overly ambitious. Such a level of precision of education "science" is probably not yet attainable. In selecting any approach to building localized monitoring and assessment, two questions

persist: "Who develops the technology of measurement?" and "For whom is a given measure satisfactory?"

One of the more promising technologies or strategies is the Fundamental Quality Levels (FQL) movement, also referred to as the School Quality Standards or Minimum Quality Standards movement. FQLs are a practical tool to operationalize the concept of school quality in a given country. The FQL consists of an agreed-upon, predetermined set of essential inputs and conditions, and, in the long run, of processes and outcomes related to school quality (Horn 1992). FQLs involve the specification of a set of minimum standards below which no school should fall. Schools falling below FQLs are targeted to receive special help, usually in the form of additional resources or special programs. For example, FQLs might specify that a minimum level of acceptable practice is that every student should have a textbook for each class in which a textbook is required, that teachers come to class on time, that a teacher not be absent, that the school have an operational parent-teacher association, and that at least 75 percent of the students pass the national examination and graduate. FQLs are currently being used in Benin, Ethiopia, Ghana, and Guinea for integrating multiple indicators of school quality into larger national school improvement initiatives.

One advantage of FQLs is that they provide political cover for the unequal distribution of resources. One problem in unequal distribution is that the advantaged schools would appear to be penalized. When that happens, powerful parents complain. FQLs provide educators and government officials with a way of standing up to individual self-interest, by providing a public rationale and justification against which personal interests can be judged. A second advantage is that FQLs provide a more sophisticated means of favoring weak schools in resource allocation than the use of test results as the sole criterion. They incorporate each factor (e.g., test scores) into a larger fabric of factors known (or believed) to be important in improving student performance. This is an advantage, of course, only if the FQL factors are really the crucial ones, which raises another issue.

Those developing FQLs face a dilemma. Advocates argue that for FQLs to be an effective tool for building consensus they must be developed through a process of widespread participation and involvement at all levels of the education system (Menou-Agueh and Zevounou 1996). The participation is justified in order to bring the widest range of insights possible into decisions and to thwart criticism when disproportionate resources are allocated to selected schools. On the other hand, for FQLs to be effective, they need to capture those most critical inputs and education processes that actually have an empirical basis for influencing what students learn. While not necessarily incompatible, these two needs often conflict.

Conditions for Sustaining Quality Improvement

Lasting improvement in education quality, whether defined in terms of basic skills, critical thinking, self-esteem, or other pupil learning, must include an in-depth understanding of the current conditions at the classroom and school levels. National reforms emanating from the center may successfully demand

Box 13: Initiating and Sustaining Education Improvements

Research coupled with reviews of practice provides sufficient insights for planning effective schooling if the planning and implementation processes include opportunities to modify inputs and processes as evidence of effectiveness is acquired. Initiating and sustaining education change must be redefined as an iterative, participatory process that involves, and may begin with, critique, evaluation, analysis, and feedback at the school and local levels. Conditions for success include:

- (i) Information to interpret the meaningful internal and external environment of the school. The existing and potential influence of such context defines opportunities and limitations of the school as an organization. A basic question is: How can the organization and its environment be altered to enable teachers, administrators, and students to do what needs to be done to achieve the school's objectives?
- (ii) Information in support of school objectives on how given classroom teaching and learning processes lead to specific student outputs. What could teachers and administrators be doing that could help achieve the various learning and performance targets?
- (iii) Information on the somewhat unpredictable process involving a number of community stakeholders in transforming insights on effective school practice and context into acceptable school and classroom interventions. Which potentially useful changes or innovations make acceptable demands on the teacher?
- (iv) Information on the processes of monitoring and evaluating pupil performance and other learning integral to the process of improving school practice, collected and analyzed over time. Which innovative technology is promising, available, and user friendly?
- (v) Continued acceptance by teachers of the validity of the new practice. What opportunities can be developed to share experiences and problems with administrators and teachers from other schools to provide a useful forum in which teachers can reassess their support for an innovation in light of the experience of other teachers?
- (vi) Continued sense of ownership of the new practice by teachers and administrators. What are the indicators of ownership and lack of ownership?
- (vii) In the long term, integrating school-level change into the behavior of the larger education system. What communication channels need to be opened, and what decision processes need to be penetrated in order to extend quality improvements?

compliance and can facilitate major adjustments in the design, scope, and delivery of education services, but rarely are sufficient to foster fundamental changes in teaching and learning.

Improving teacher training and increasing teacher incentives are necessary but often insufficient conditions to sustain processes of improving quality. Box 13 suggests additional local and school conditions that increase the likelihood of sustainability.

At the school level, under policies of decentralization, sustainability requires at least three general conditions: shared goals of school and community regarding the learning objectives of the school; professional, student-focused

commitment among teachers; and autonomy to allocate instruction resources flexibly. There is also an obligation to hold the school accountable to the community for outcomes in the context of national indicators. These are challenges for all education systems and nations (Adams 2002).

Conclusion

Given the stated national priorities to improve education quality and the massive programs for upgrading curriculum and teacher quality, *Why does quality not improve?* As Box 14 suggests, there are persisting obstacles to improving education quality. However, there is evidence that the quality of education has been improving in DMCs, but unevenly across and within countries. Indeed, many of the education challenges of the next decade have been created by the remarkable successes across Asia during the last two decades. During this period, regional primary education gross enrollment rates grew to over 90 percent, and by the 1990s several countries had primary education net enrollment rates above 90 percent. Education expansion and an extended period of economic growth (and recent economic decline), and evolving patterns of education decentralization have brought issues of education quality and relevance to the forefront and complicated the search for solutions.

The problem of low-quality education in some Asian countries was not created suddenly nor will it be resolved quickly. Five challenges lie ahead:

Box 14: Why Does the Quality of Education Not Improve?

The problems facing education systems in South and Southeast Asian countries often appear to be alike, for example, poorly trained teachers, inadequate supplies of textbooks, weak management, little or no instructional supervision, and poor facilities. Yet such conditions exist despite elaborate bureaucracies to address such problems and a claim by every country that it has a high priority for quality improvement. So, *why does quality not improve?*

- (i) High quality is an elusive target. Advocating higher education quality tends to be a popular cause. For the same reason, improving school quality is a safe goal in that it is never satisfied.
- (ii) The desire for high quality is, in practice, "capped" by a competition for resources. Governments and communities claim they want high quality but always mean they want as much as they can get for the amount of money they want to spend. The search for quality is constrained by the willingness to pay the price.
- (iii) Raising quality has its enemies. Related to (ii) above, raising quality involves tradeoffs. Quality interventions usually require additional resources. Those who lose in the transaction may see quality improvement as secondary to what they value.

- (i) Education decentralization is shifting increased responsibility for quality improvement to educators lower in the system and to communities. Thus, new demands emerge for leadership at each level of government. Improving education quality while maintaining the integrity of the national system of education and attaining equity goals creates a challenge much greater than administering expansion of enrollments. Two key questions of the next decade will be: (a) "How can central government influence instructional and learning activities at the school and classroom level?"; and (b) "How will local community and school officials learn about, and respond to, the range of options available to them for raising school quality?"
- (ii) In the competition for funds, quality may have to compete with access. Though both have political appeal, expanding access is more politically saleable than raising quality. Increasing access conveys an egalitarian value while raising quality may appear to be exclusionary. Consequently, maintaining the commitment to quality improvement may be difficult, particularly during times of economic uncertainty. The challenge is how to keep education quality high on policy agendas and a public concern. The role of ADB and other bodies can be highly significant in encouraging attention to education quality through dissemination of information on its priorities, through dialogue with DMCs, and in assisting development of more effective national policy environments.
- (iii) The information explosion of the last 20 years is putting new pressure on schools to keep up. The widespread availability of computers and various communication technologies raises anew the issue of how governments can utilize low-cost and higher-cost technology to improve the quality of instruction. One fear is that the differential availability of technology across countries in the region will lead to even greater differences in the quality of instruction.
- (iv) Within countries, does the call for higher education quality include equitable distribution of school quality across geographic areas and sub-populations? Low quality is often due to the convergence of disadvantage. Raising school quality in those circumstances can be expensive and complicated because it requires attention to an interwoven web of problems, often for groups that have relatively little political power.
- (v) Regional cooperation in raising education quality makes great education and economic sense but often is constrained by political sensitivities and mired in minor differences between national systems. Countries' sensitivities about their own curricula sometimes preclude effective cooperation. One of the challenges of the next decade is identifying constructive and cost-effective ways in which countries can work together to improve teaching and learning.

Research and experience indicate that much remains to be learned about factors contributing to the several meanings of education quality and about the processes of improving education quality. Although a large body of research knowledge exists on learning, teaching, and organizational change, extant knowledge, even ignoring the normative and political nature of education

decisions, is incomplete and insufficient to address the complex, messy problems of education. At the same time, our insights are well ahead of common practice. These concurrent conditions suggest that policymakers and practitioners should envisage a two-pronged approach to strategies for improving education quality. The first assumes moderate risk and suggests that more resources and energies should be devoted to implementing those education changes which research and experience suggest – through a measure of credible evidence – are frequently successful in contributing to improving quality. The second recognizes that many education problems cannot be treated as technical problems and are not readily amenable to technical solutions.

The question, “What works?” has little meaning unless it is followed by “When?”, “Where?”, and “For whom?” There are rarely single answers to the causes of education problems as confronted by policymakers. Sustaining a process of improving education quality may require the substitution of dialogue and continued inquiry for the comfort of certainty.

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Appendix

The following is a list of the eight Country Sector Studies referred to in this booklet:

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Kyrgyz Republic:

Kyrgyz Research Institute of Higher Education Problems, Ministry of Education, Science and Culture. Bishkek, Kyrgyz Republic. 1997. *Country Report: Regional Study of Trends, Issues and Policies in Education*. Country Sector Study prepared for ADB. Members of the Research Team included: D.A. Amanaliev; I.B. Becboev; G.M. Belaya; U.N. Brimkulov; N.N. Janaeva; M.T. Imankulova; L.P. Miroshnichenko; V.L. Machnovsky; S.K. Marzaev; A.A. Shaimergenov; V.K. Jantzen.

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Papua New Guinea:

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Philippines:

Development Academy of the Philippines. 1997. *Policies, Trends and Issues in Philippine Education. A Case Study* Commissioned by UNESCO-Bangkok, Thailand for ADB. The Task Force Members included: Ramon C. Bacani; Napoleon B. Imperial; Juan M. Sabulao; Mario Taguiwalo; Charles C. Villaneuva; Carmencita T. Abella; Alma Bella Z. Generao. Research Team Members included: Elizabeth Y. Manugue - Research Lead; Eduardo T. Gonzalez; Anicetas C. Laquian; Merialda F. Nadunop; Mercedita C. Amar; Shiela D. Valencia.

Viet Nam:

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Index

- Africa, 22, 32
- Asian Development Bank (ADB), v, 1, 7, 9, 18, 28, 30, 36, 59
- assessment
 - student, 14, 41
 - system, 5. See also examination system
- Australia, 4
- Austria, 4
- Bangladesh, 18, 20, 21, 22, 23, 42
- basic
 - education, 5, 19, 28, 38, 44, 47, 48
 - literacy, 2, 3, 6
- basic education, v
- Benin, 55
- Canada, 4
- China, People's Republic of (PRC), 18, 33, 37, 38
- class size, 11, 13, 18
- classroom
 - demonstration, 20
 - management, 13
 - multigrade, 20, 27, 28
 - teaching, 9–35, 43, 46, 56
- community
 - mobilization, 15, 33, 50
 - resource, 52
- community-of-learners approach, 32
- cost-effective teaching, 42, 59
- Country Sector Study, 3, 6, 17, 19, 20, 31, 41, 49
- culture, 5, 24, 31, 36, 39, 53
- curriculum, 1, 3, 5, 6, 9, 12, 13, 16, 17, 19, 20, 23, 25, 27, 29, 30, 31, 29–32, 34, 38, 39, 40, 41, 44, 48, 49, 53, 58, 59
- Cyprus, 4
- Czech Republic, 4
- decentralization, 33, 34, 35, 37, 38, 49, 54, 56, 58, 59
- dependency ratio, 7
- dropout rate, 42
- East Asia, 7
- economic
 - change, 5
 - development, v, 7, 8
 - growth, 7, 8, 58
- education
 - administrator, 29, 34, 35. See also school administrator
 - attainment, 8, 19, 26
 - budget, 2, 23, 30, 33, 47
 - bureaucracy, 32, 41
 - compulsory, 48
 - cost, 7, 42
 - efficiency, 9, 54
 - expansion, 8
 - expenditure, 7, 47. See also school expenditure
 - governance, 9, 23, 32–35
 - input, 2, 5, 6, 8, 9, 13, 14, 28
 - investment, v
 - management, 9, 16, 23, 32–35
 - opportunity, 7, 38
 - opportunity cost, 5, 24
 - quality, 1, 2, 3, 5, 9, 30, 36, 37, 45, 58, 59
 - quality improvement, 1, 7, 14, 17, 18, 30, 34, 36–57, 58, 59, 60
 - reform, 28, 31, 34, 35, 50
 - repercussions, 8
 - system, 1, 2, 3, 5, 6, 7, 14, 16, 19, 28, 32, 33, 40, 42, 47, 53, 55, 56, 57, 58, 59
- effective
 - school, 14, 15, 34, 44, 49, 50, 51, 56
 - schooling, 9–17, 56
 - teacher, 16, 29, 43–47
 - teaching, 43–47
- effective schools research, 13, 14
- egalitarian value, 59
- elitism, 49
- England, 4
- enrollment, 7, 8, 17, 21, 39, 59
- equity, 9, 49, 51, 59
- Ethiopia, 55
- examination system, 16, 40. See also assessment system
- fertility rate, 7
- former Soviet Union, 8, 42, 48
- Fundamental Quality Level (FQL), 55

- gender, 12, 13, 14, 21, 22, 24, 25, 26, 51
- Ghana, 55
- Greece, 4
- Gross Domestic Product (GDP) per capita, 7, 22
- Gross Enrollment Rate, 58
- Guinea, 55
- headteacher, 15, 34, 37, 38, 42, 44, 49, 51, 52. *See also* school administrator
- higher education, 49
- Hong Kong, China, 3, 4, 7, 12
- Hungary, 4
- Iceland, 4
- illiterate, 27
- India, 11, 12, 15, 18, 19, 20, 21, 24, 25, 26, 27, 37, 38, 51
- Indonesia, 3, 8, 11, 12, 37, 38, 42, 43, 45
- industrialization, 2, 7
- input-output
 - model, 10, 14
 - ratio, 8
- instructional
 - hour, 5
 - leadership, 38, 50, 51
 - material, 5, 11, 13, 35, 40, 52, 54. *See also* teaching material, textbook
 - supervision, 16, 34, 49, 58
- Instructional
 - supervision, 45
- internal
 - efficiency, 2, 8
 - efficiency ratio, 8
- internal supervision, 34, 49, 51
- Iran, 4
- Ireland, 4
- Israel, 4
- Japan, 4
- Kazakhstan, 8, 42
- Korea, Republic of, 3, 4, 7, 8, 12, 17, 23, 51
- Kuwait, 4
- Kyrgyz Republic, 3, 8, 33, 34
- labor
 - force, 3, 12
 - market, 7, 26
- Lao People's Democratic Republic (Lao PDR), 5, 18, 28, 44
- Latin America, 22
- Latvia, 4
- learning opportunity, 9, 13
- literacy, 8, 18, 27, 31
- Malaysia, 7, 8, 11, 12, 50
- management of teaching, 49–53
- mathematics, 2, 3, 4, 25, 26
- modernization, 18
- Mongolia, 8
- mortality rate, 7
- Nepal, 5, 12
- Net Enrollment Rate, 58. *See also* Gross Enrollment Rate
- Netherlands, 4
- New Zealand, 4
- Norway, 4
- numeracy, 2, 3, 6
- Organisation for Economic Co-operation and Development (OECD), 19, 23
- Pakistan, 3, 6, 8, 19, 21, 24, 25, 26, 30, 31, 33, 38, 40, 51
- parent-teacher association, 55
- partnership
 - government-community, 53
 - public-private, 42
- pedagogic skill, 20, 37. *See* teaching skill
- Philippines, 3, 8, 11, 12, 23, 27, 29, 31, 38, 42
- policymaker, 1, 3, 14
- Portugal, 4
- poverty, 7
- preprimary education, 12, 48
- primary education, 2, 7, 8, 27, 31, 48, 58. *See also* basic education
- privatization, 41, 42
- production function model, 14. *See also* input-output model
- quality education, 2, 7, 38, 41, 42, 43, 58
- regional inequity, 42
- regression model, 14, 16
- remote school, 27. *See also* rural school
- research, 1, 2, 5, 9, 13, 14, 15, 17, 25, 27, 41, 44, 45, 51, 59
- rural
 - area, 8, 9, 18, 20, 22, 27, 30, 33, 38
 - school, 20, 25, 26, 27, 28. *See also* remote school
- school
 - access, 1, 12, 51
 - administrator, 1, 2, 6, 26, 29, 38, 51, 56. *See also* education administrator, headteacher
 - climate, 14

- cluster, 15, 21, 44
- effects, 10, 11, 14, 15, 44
- expenditure, 11, 13. *See also*
 - education expenditure management, 23, 33, 34, 43, 49
 - organization, 6, 32–35
 - physical condition, 3, 5
 - quality, 1, 17, 26, 37, 41, 51, 54, 55, 58, 59
- school-age cohort, 7
- school-community linkage, 32, 34, 39, 49, 52
- Scotland, 4
- secondary education, 3, 8, 19, 49
- Singapore, 3, 4, 7, 17
- Slovenia, 4
- social class, 14, 25
- socialization training, 48
- socioeconomic status, 12, 13
- South Asia, 3, 7, 18, 20, 22, 24, 32, 42, 45
- Southeast Asia, 3, 20, 38, 44, 45, 48, 58
- Sri Lanka, 8
- student
 - achievement, 1, 2, 4, 5, 6, 9, 11, 12, 13, 14, 15, 19, 24, 25, 26, 27, 28, 40, 41, 46, 51, 52
 - basic competencies, 6, 41
 - cognitive achievement measure, 14
 - life skill knowledge, 6
 - performance, 5, 9, 10, 12, 20, 40, 55
 - psychological need, 6
 - social skill, 6
- student/teacher ratio, 3, 18
- Taipei, China, 7, 17
- teacher
 - absenteeism, 19, 22
 - certification, 19, 20, 39, 45, 47
 - compensation, 23, 47, 51
 - deployment, 17–19, 29, 39
 - education, 39, 42
 - effectiveness, 5. *See also* effective teacher
 - female, 24, 25, 26, 51
 - incentive, 6, 22–23, 36, 43, 45–47, 56
 - job satisfaction, 46
 - level of education, 14, 17, 25, 43
 - male, 24, 25, 26
 - morale, 5, 21
 - motivation, 6, 19, 22
 - performance, 17, 44, 45
 - preparation, 20, 40, 44
 - qualification, 3, 5
 - quality, 9, 19, 26, 23–26, 27, 37, 58
 - recruitment, 17–19, 29, 39, 43, 53
 - role, 17, 23–26
 - salary, 3, 22, 44, 45, 46, 47
 - self-esteem, 23, 32, 55
 - skill, 19
 - status, 17–19
 - subject mastery, 19
 - untrained, 20, 21
 - working condition, 18, 19, 46
- teacher empowerment program, 21, 24
- teacher training, 5, 6, 19–22, 29, 39, 40
 - classroom practice, 21
 - cost, 40, 44. *See also* teacher education cost
 - in-service, 3, 6, 11, 15, 17, 20, 21, 28, 39, 43, 44, 51, 52
 - preservice, 11, 17, 19, 20, 21, 27, 39, 44
- teaching
 - material, 3. *See also* instructional material, textbook
 - method, 5, 16, 28, 35, 40
 - multigrade, 29
 - quality, 28
 - skill, 20, 44. *See also* pedagogic skill
- teaching-learning process, 14, 15, 42, 43
- technology, 6, 15, 31, 32, 54, 55, 56, 59
- tertiary education, 19, 47, 48. *See also* higher education
- textbook, 2, 3, 5, 6, 8, 11, 14, 16, 17, 20, 24, 30, 31, 34, 38, 39, 40, 41, 46, 49, 53, 55, 58. *See also* instructional material, teaching material
- Thailand, 3, 4, 8, 11, 12, 15, 16, 17, 22, 23, 51
- Third International Mathematics and Science Study (TIMSS), 3
- United Kingdom. *See* England
- United Nations Children's Fund (UNICEF), 21
- United States, 4
- urban
 - area, 8, 18, 22, 39
 - poor, 38
 - school, 25
- Uzbekistan, 8
- Viet Nam, 5, 8, 22, 23, 27
- vocational education, 49

