

DEVELOPING EFFECTIVE EDUCATION SYSTEMS

This chapter examines issues and trends directly related to quality, equity and access, management, and finance as these affect the organization, process, and strategies associated with education improvement. Also included is a focus on trends and issues related to major subsystems of the education system.

A. Improving Education Quality

Virtually all DMCs have put the improvement of education quality among their highest national priorities for the next decade. To some extent, plans and policies calling for higher-quality schooling now supplement or even replace earlier attention given to such priorities as education expansion and school access. Translating the growing consensus on the need to improve quality into viable policies is a major challenge.

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

As changes in education governance take place, and the number of stakeholders and clients involved in education decisions increases, the potential for misunderstanding, disagreement, and conflict regarding the meaning of education quality also rises. Consensus is unlikely among parents, teachers, administrators, and students on the ingredients of quality, how to measure it, and how to initiate and sustain improvement. This chapter begins by examining the concerns expressed among DMCs

about education quality; briefly reviews relevant research; focuses on teaching and learning; and suggests strategies that countries committed to quality improvement might use to raise school quality over the next decade. An attempt is made, where possible, to interpret the quality of education within context. The most common meaning of education quality, as inferred from its use, 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 a country, and across schools in a given locality.

1. Concerns with Problems of Quality

Generalizations about education quality defined as student achievement on core subject areas across Asia are difficult. The more economically advanced economies of Asia are among the world leaders in student achievement, as measured by comparisons of cross-national test scores (IEA 1995). However, many students in the poorer countries, even after several years of primary schooling, may not have acquired basic literacy and numeracy. Moreover, the disparities in the quality of instruction across regions within a single country sometimes exceed the differences among countries. The following paragraphs describe some of the intra- and intercountry differences that exist in conditions of low education quality.

a. Lao PDR

Improvement of education quality is a critical challenge facing the Lao PDR. The poor quality of education inputs and of processes in basic education is evidenced by inappropriate curricula and teaching methods. Textbooks are scarce or nonexistent in many schools, while students' access to instructional materials is diminishing as parents are expected to make increasing financial contributions for materials. In addition to problems of financing, instructional materials are lacking, due to the absence of a reliable distribution system to schools. One indicator of low efficiency in the system is that teachers' average instructional hours (estimated at 10 per week) are well below half the level 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 a lack of maintenance (ADB 1993a). Finally, low levels of teacher qualification and the absence of systems for

teacher upgrading and professional support are endemic at all levels of education. Teachers' classroom effectiveness is often problematic, in part due to inadequate teacher training. For example, in school year 1989/90, roughly 35 percent of primary school teachers were considered wholly "unqualified", while even among new primary-level teachers appointed in 1996/97, the figure remained at nearly 17 percent. This problem is compounded by the need to improve access to, and the quality of, in-service teacher training (ADB 1993a, 2000a).

b. Viet Nam

Schools are poorly furnished and equipped. Students lack textbooks, and the curriculum itself is often irrelevant to today's needs. Assessment systems are poor. Teachers do not have sufficient training and are unaware of new and more effective teaching methods. These factors have all contributed to a decline in quality. Other factors in this decline are the result of the significant economic changes that Viet Nam is undergoing, and that clearly affect the demand for entering or staying in the education system (NIED 1997).

c. Nepal

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

Classroom instructional practices are still very poor, and schools have not been 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 an adequate number of trained teachers. Special efforts must be made to ensure that teachers from poor and remote communities (especially female teachers with considerable home responsibilities) can participate in training. In terms of pedagogic content, teachers need to be trained to become sensitive to the emotional, psychological, and education needs of the children. More broadly, the curriculum needs to be reformed to make it relevant to and effective for the needs of society, given that education poses a sizable opportunity cost, if not also a monetary burden, on all families.

Dissatisfaction with the costs of the rapid expansion of education systems, disillusionment 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 all 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 that suggests (i) in developing countries, that discretionary funding and school-level initiatives can significantly affect student performance, and (ii) in industrialized countries, that the characteristics of high-quality schools are not only known, but to a degree, are common across a range of cultures (RCEID 1997).

d. Other Countries

The other country sector studies elucidate similar types of constraints, as outlined below.

| | |
|----------------------------|--|
| People's Republic of China | Excessive emphasis on examinations; heavy teaching schedule of teachers; low teacher salaries; inadequate supply of teaching materials. |
| Indonesia | Low general qualifications of some teachers; weak subject mastery by some teachers; low status of teaching. |
| Kyrgyz Republic | Overly extensive curricula, overloading students and over-stretching resources; shortages of library facilities, books, and new technical equipment; inadequate testing of students' knowledge; system overly centralized/regulated and not sustainable. |
| Pakistan | Poor physical facilities; inadequate distribution of materials; excessive school fees; "ghost" schools (existing only on paper); shortage of trained teachers; high student/teacher ratio. |
| Papua New Guinea | Inadequately trained teachers; shortage and poor quality of textbooks; failure of innovations to produce improvements. |
| Philippines | Inadequate teacher in-service training; low teacher salaries; misallocation of teachers (teachers not teaching their specialties). |

These country sector studies all reported dissatisfaction with the quality of education systems. Often mentioned or implied were issues such as poor teacher training, the lack of teacher motivation, the need for curriculum revision, inadequate facilities, and insufficient numbers of textbooks. Strategies proposed to improve quality included 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. Little analysis was presented of why these strategies were thought to be appropriate, neither was evidence presented that these efforts were cost effective. Further, no consideration was given regarding the possible trade-offs of choices by decision makers seeking to weigh their options. However, the recommendations do reflect prevailing assumptions about what important, relevant strategies are available to policymakers for increasing schools' contribution to learning.

The country sector studies and most international agency literature tend to assume a common, but nonexplicit, meaning of quality, which usually seems to be a measure of student achievement. At times, however, comments are 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. But the examination of quality problems has usually been in terms of deficits. Recommendations for improving quality were presented in terms of reducing deficits by providing more funds, materials, and additional training. Moreover, the country sector studies also suggested that quality could be improved by altering the role of teachers to become more reflective of best practice, the further use of evaluation techniques in the classroom, more innovative and piloted experiments, more effective allocation of teachers, developing in-service training in actual class situations, and performance-based incentives for teachers and administrators.

2. Teaching and Learning: Inside the Black Box

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, it is a self-contained system to a degree, and different schools (or even classrooms) may respond to a given set of inputs in different ways. The implication

of this condition is that characteristics, meanings, and effects of the interaction of teachers and students may be influenced through national policies but cannot be mandated from central offices of ministries of education.

Many of the policy documents published by ADB and the World Bank seek to specify those inputs that determine academic achievement and knowledge skills that translate directly into increased labor productivity or improved opportunities for acquisition of further education. Tables 3.1 and 3.2 summarize two bodies of research related to the determinants of school outputs, as typically measured by scores on standardized achievement tests. Table 3.1 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. Table 3.2 attempts to summarize 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 3.1, somewhat more attention is given to school process variables.

This set of studies reflects to a degree 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 3.1 does not hand the policymaker a package of manipulable inputs and processes that can be used 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 dimensions and elements of effective schools identified in Table 3.2 tend to be softer and more qualitative than many of the variables found in Table 3.1. These dimensions were often examined directly through observation within schools and comparisons across schools. Table 3.2 offers a summary of the second body of relevant research (i.e., effective schools research) and captures many of the organizational and process variables found in these studies.

Table 3.1: Selected Studies of School Effects in Asia

| Study | Economy | Findings | Source |
|-------------------------------|-----------------------|--|---|
| School Expenditures per Pupil | Indonesia (secondary) | School expenditures are not associated with higher achievement. | Harijati 1998 |
| | Malaysia (secondary) | Higher school expenditures are not associated with higher achievement. | Beebout 1972 |
| Class Size | Thailand (primary) | Negative evidence that small class size improves student achievement in reading and science. | Heyneman and Loxley 1983 |
| | India (primary) | 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 raises achievement. | Beebout 1972 |
| School Size | Thailand (primary) | Large school size has a positive effect on achievement. | Comber and Keeves 1973 |
| | Malaysia (primary) | Large school size has a negative effect on achievement. | Beebout 1972 |
| | Indonesia (primary) | Large school size has a positive effect on achievement. | Muhammad 1997 |
| School Library | Thailand (primary) | The presence and active use of a school library raise reading achievement. | Thorndike 1973 |
| | Malaysia (primary) | The presence and active use of a school library raise reading achievement. | Beebout 1972 |
| | Indonesia (secondary) | Use of a library does not improve achievement. | Harijati 1998, Sembiring and Livingstone 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 achievement in reading and science. | Comber and Keeves 1973 |
| | Philippines | Instructional materials lead to higher achievement in science. | Heyneman et al. 1983 |
| | Indonesia (secondary) | No evidence that instructional materials lead to higher achievement. | Sembiring and Livingstone 1981 |
| | Indonesia (secondary) | Instructional materials do not improve language achievement. | Harijati 1998 |
| | Thailand (primary) | Instructional materials do not improve language achievement. | Fuller and Chantavanich 1976 |
| Laboratories | India (primary) | The presence and instructional time spent in laboratories raise science achievement. | Heyneman and Loxley 1983 |
| | Thailand (primary) | The presence and instructional time spent in laboratories raise science achievement. | Heyneman and Loxley 1983 |

Table 3.1: Selected Studies of School Effects in Asia (cont'd.)

| Study | Economy | Findings | Source |
|--|-----------------------|---|--------------------------------|
| Preservice Teacher Training (years of primary and secondary schooling) | India (primary) | Teachers' years of primary and secondary schooling raise science achievement. | Heyneman and Loxley 1983 |
| | Thailand | Teachers' years of primary and secondary schooling raise language and math achievement. | Fuller and Chantavanich 1976 |
| Preservice Teacher Training (years of post-secondary instruction and teacher training) | India | Years of postsecondary instruction raise reading and science achievement. | Comber and Keeves 1973 |
| | Thailand | Years of postsecondary instruction raise reading and science achievement. | Comber and Keeves 1973 |
| | Indonesia (secondary) | Years of postsecondary instruction raise arts and science achievement. | Sembiring and Livingstone 1981 |
| In-Service Teacher Training | Indonesia | Upgrading the skills of teachers leads to higher achievement in arts, science, and language. | Sembiring and Livingstone 1981 |
| Teacher Experience | India | Longer teaching experience positively influences achievement. | Heyneman and Loxley 1983 |
| | Malaysia | Longer teaching experience positively influences achievement. | Beebout 1972 |
| | Indonesia (secondary) | Longer teaching experience positively influences achievement. | Harijati 1998 |
| | Indonesia | No evidence that teacher experience is associated with achievement. | Sembiring and Livingstone 1981 |
| Length of Instruction | India | More hours or days of instruction increase achievement. | Heyneman and Loxley 1983 |
| | Thailand | More hours or days of instruction increase achievement. | Heyneman and Loxley 1983 |
| | Indonesia (secondary) | More hours of instruction increase achievement. | Harijati 1998 |
| Homework | India | No evidence that homework raises achievement. | Comber and Keeves 1973 |
| | Thailand | No evidence that homework raises achievement. | Comber and Keeves 1973 |
| High Teacher Expectation | Hong Kong, China | Teachers who expect high achievement raise student performance. | Rowe 1971 |
| Teacher Time Spent on Class Preparation | India | More hours spent preparing for class raise science achievement. | Heyneman and Loxley 1983 |
| | Thailand | No evidence that class preparation leads to higher achievement. | Heyneman and Loxley 1983 |
| Active Teaching and Learning | Indonesia (primary) | Students participating in active learning perform better than students without active learning. | Tangyong et al. 1989 |

Table 3.1: Selected Studies of School Effects in Asia (cont'd.)

| Study | Economy | Findings | Source |
|---------------------------------|-----------------------|--|------------------------------|
| Vocational Curriculum | Philippines | Vocational curriculum is negatively associated with an effective labor force and earnings. | Psacharopoulos 1973 |
| | Thailand | Vocational curriculum is negatively associated with an effective labor force and earnings. | Psacharopoulos 1973 |
| | Indonesia | Vocational curriculum is negatively associated with an effective labor force and earnings. | Clark 1983 |
| In-Plant Vocational Training | Korea | In-plant training is more cost effective. | Lee 1985 |
| Preprimary Schooling | Thailand (primary) | Third graders who attended preprimary schools performed better in math and Thai language than did children who had no preprimary experience. | Raudenbush and Bhumirat 1991 |
| Socioeconomic Status of Parents | Nepal | Socioeconomic status of parents significantly determines school access of children. | Shrestha et al. 1986 |
| | Indonesia (secondary) | Education of parents is not associated with student achievement. | Muhammad 1997 |
| Gender Differences | Malaysia | Both girls and boys demonstrate favorable attitude toward math and possess equivalent problem-solving skills. | Swetz et al. 1983 |
| | Indonesia | Both girls and boys demonstrate favorable attitude toward math and possess equivalent problem-solving skills. | Swetz et al. 1983 |

Because of the general and sometimes vague nature of several of these dimensions, e.g., positive school climate and effective use of instructional time, attempts to use the research to develop more effective schools are likely to be controversial. Moreover, the summary of conditions of effective schools shown in Table 3.2 is one of many that could have been developed from available research.

In a further complication, apparent solutions to ineffective teaching and learning turn out to be complex because of organizational context. For example, teacher motivation is widely assumed to be a contributing factor to improved instruction and learning. Frequently suggested teacher incentives include (i) merit pay, 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

Table 3.2: Dimensions of Effective Schools

| Dimensions | Core Elements | Facilitating Elements |
|------------|--|---|
| Leadership | <ul style="list-style-type: none"> • Positive climate and overall atmosphere. • School and classroom site management and decision making. • Strong leadership. • 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 | <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 non-promotion of students. • Less emphasis on strict ability grouping; interaction with more accomplished peers. • Sense of school community. • Parental involvement and support. |
| Efficiency | <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 opportunities to learn. • School-wide recognition of academic success. |

(iii) location premiums to teachers working in rural areas (Chapman 1998). Unfortunately, in practice, none of these incentives may work. Teachers who do not receive merit pay may respond, not by trying harder, but by reducing their effort. And, paying premium salaries to math and science teachers may make other teachers angry, frustrated,

and bitter. Further, teachers apparently would rather be unemployed in urban areas than work in certain remote regions (Murnane and Cohen 1986). (For a thorough review of teachers' incentives and school management, see Chapman 1998.)

As a second example, the importance of strong school management to teaching, learning, and effective schools is well established. Yet experiments in site-based management frequently do not produce significant changes in teaching and learning. Moreover, 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.

The lack of compelling research findings and the often contradictory evidence culled from experience suggest caution. However, the potential for improving the teaching-learning process is not as bleak as the inconsistencies in research and complexities of practice may suggest. Research and critical examination of practice offer sufficient insight to initiate small- and large-scale interventions viewed as experiments. Research on school effects and effective schools offers significant insight that could become part of in-service training programs either for teachers and head teachers, or as a basis for district- or school cluster-level innovations. Strategies to improve teaching and learning are likely to include improving school management; increasing the amount of learning materials and instructional time; upgrading teachers' knowledge of subject matter and skills; and encouraging parental and community involvement in developing a supportive learning environment. Additional characteristics of effective teaching and learning might involve establishing high expectations for students and, at all levels of schooling, include explicit attempts to integrate work knowledge and skills into the curriculum.

Research and experience indicate that much remains to be learned about the contents of the classroom. This lack of knowledge suggests the importance of experimentation with new curricula and new delivery mechanisms. One problem is that the poorest DMCs and education systems, which arguably need innovations and cost-effective teaching and learning the most, have the fewest financial and human resources to invest in such purposes. At the community and school levels, direct examination of qualitative portraits of practice, successes, and failures is required to achieve greater insight. Why, for example, are some communities showing declining demand for schooling? Why do some

communities reject existing schools? What unwanted outcomes do parents fear?

As stated above, because of the general and sometimes vague nature of some of the dimensions and elements, attempts to use the research to develop more effective schools are likely to provoke controversy. Moreover, the research on effective schools, largely carried out in Europe and North America, shares many of the weaknesses of school effects studies, such as: (i) lack of an 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 noncognitive 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. These characteristics suggest that the school effects and effective schools research (i) are unlikely to provide prescriptions readily adaptable across societies, regions, or even school sites; and (ii) explain little directly about the process of improving education, that is, implementing the policies and sustaining practices derived from such research activities.

3. Strategies and Conditions for Improving Education Quality

Given the stated national priorities to improve education quality and the massive programs for upgrading curricula and teacher competence, the question remains: Why does the quality of education not improve? As Box 3.1 suggests, obstacles to improving education quality persist. However, some evidence suggests 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 in education across Asia during the last two decades, when 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

Box 3.1: Why Does the Quality of Education Not Improve?

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

- *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 reached.
- *The desire for high quality is, in practice, “capped” by competition for resources.* Governments and communities claim they want high quality, but they 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.
- *Raising quality has its enemies.* Related to (ii) above, raising quality involves trade-offs. Quality interventions usually require additional resources; those who lose in the transaction may see quality improvement as secondary to what they value.

decline) and evolving patterns of education decentralization have brought issues of education quality and relevance to the fore, and have complicated the process of finding solutions.

Policies and strategies that influence education quality are often directly or indirectly linked to, and at times inseparable from, those that affect equity and efficiency. As such, many of the strategies discussed below (pages 57–86), and the analysis of systemic and institutional policy support and strategies for education reform found in Chapter 5 identify interventions that include or affect quality change. In this chapter, discussion of strategies is limited to those related directly to teaching and learning. In addition, the chapter gives brief attention to the conditions for sustaining the process of improving quality.

a. Strategies to Improve Teaching and Learning

Although all DMCs are committed to improving quality, when investments in quality compete with investments in access, the latter often win out. Expanding access is more politically sellable than raising quality. Therefore, those countries that are struggling to attain universal

basic education and reduce illiteracy will probably continue to do so. Yet, quality enhancement and increased access are not necessarily in conflict. Integral to delivery of basic education are decisions related to teacher skills and motivation, the curriculum, textbooks, and instructional materials. Since these are basic ingredients to the processes of teaching and learning, quality improvement and increased access may be achieved together.

Strategies

- *Restructuring on-the-job training for teachers.* Upgrading teacher training is, worldwide, the single most popular strategy for improving education quality. At the same time, in-service teacher training is frequently an expensive intervention, and little credible evidence is available that such training significantly influences teacher performance. One strategy for improving teacher competence on the job, other than traditional in-service programs, is “internal supervision” provided by head teachers or designated teachers with appropriate training. Research in Thailand by Raudenbush and Bhumirat (1991) concludes that there is evidence of a link between the intensity of internal supervision a teacher receives and students’ academic achievement. These researchers further state, “there is equally strong evidence that students view teachers receiving such supervision as receiving higher quality instruction than teachers with less supervision.” Creating instructional leaders not only has implications for teacher and student performance but also impacts on the necessary qualifications of head teachers and structures of local levels of administration.
- *Providing relevant and acceptable teacher incentives.* A key education issue in most DMCs for the next decade is the need to design better teacher incentive systems. The prospect of identifying a system of 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 and Snyder 1993). Table 3.3 suggests a set of incentives that has been used across many countries in an attempt to stimulate better teacher performance (Kemmerer 1990). Among the three types of incentives, remuneration has received the most attention.

Table 3.3: Types of Teacher Incentives

| Remuneration | | | |
|--|--|--|--|
| Monetary Salary <ul style="list-style-type: none"> • Beginning salary. • Salary scale. • Regularity of payment. • Merit pay. | In-Kind Supplements <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. | Benefits <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. | Bonuses <ul style="list-style-type: none"> • Bonus for regular attendance. • Bonus for student achievement. • Grants for classroom projects. |
| Allowances <ul style="list-style-type: none"> • Materials allowance. • Cost of living. • Hardship. • Travel. | | | |
| Instructional Support | | | |
| Materials <ul style="list-style-type: none"> • Teacher guides: on time in all subject areas in appropriate language. • Student textbooks: on time in all subject areas in appropriate language. • Classroom charts. • Science equipment. • Copy books. • Pencils. • Chalkboard. • Safe storage for materials. | Supervision <ul style="list-style-type: none"> • Observation. • Feedback. • Coaching. | Teacher Training <ul style="list-style-type: none"> • Classroom management. • Materials use. • Lesson preparation. • Test administration. | Career Opportunities <ul style="list-style-type: none"> • Master teacher. • Principal. • Supervisor. • Postservice training. |
| Working Conditions | | | |
| <ul style="list-style-type: none"> • School facilities. • Classroom facilities. • Number of students. • Age range of students. • Collegiality. | | | |

Source: Kemmerer 1990.

The weight of the research suggests that after an acceptable salary level is reached, the overall quality of the working life, rather than the efficacy of 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 will vary from country to country, considerable effort can be saved by international sharing of information on successful and unsuccessful experiences with the use of incentives.

As a practical matter, incentive systems are surprisingly difficult to operate, for six reasons: (i) to be effective, rewards have to be paired directly and immediately 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; (ii) 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; (iii) the incentive value of rewards changes over time. When a reward is widely received, it becomes an expectation and eventually an entitlement; (iv) research on teacher incentives suggests that incentives can increase teachers' job satisfaction, which, in turn, may improve teacher retention, but incentives do not necessarily change classroom teaching performance. Moreover, incentives can be demoralizing to those who do not receive them (Chapman and Snyder 1993); (v) as in all innovations, the impact of the system should be kept in mind. Team and school performance rewards may tend to take precedence over individual merit systems; and (vi) any scheme of incentives, to be implementable, should be developed with the participation of the teaching community.

- *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 that students encounter in school is determined by the length of the school day, scheduling of the school year, and teacher and student attendance. The length of the instructional day and school year can be changed most directly by policy and regulation. However, changes to existing practice generally have consequences for teacher compensation and facilities' use, which, in turn, create other issues. Strategies to ensure full student and teacher attendance are harder to implement and often require a community-wide effort. Moreover, the amount of learning time outside school—in the home or elsewhere—may be a requisite for high student achievement. Parents' investment in children's education in time and money is

- perhaps the most powerful intervention for enhancing learning achievement (World Bank 1997a, p. 89).
- *Better use of curriculum and supporting textbooks.* 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 appropriate textbooks for the grades they teach. Common curriculum problems include (i) the national curriculum is not well developed, objectives are not clear, and there is insufficient articulation of curricula across grade levels (i.e., some curricular elements may be repeated, while students may be inadequately prepared for others); (ii) the curriculum is developed but is not fully accepted by teachers; (iii) the curriculum is clearly specified, but it is too difficult or covers too much material for the available time; and (iv) teacher training is not aligned with the curriculum.
 - *Textbooks identify, sequence, and pace curriculum content.* 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. Thus, good textbooks, if effectively used in the classroom, can partially offset weak teacher preparation. However, problems in many DMCs persist in all stages of the development, dissemination, and use of textbooks and instructional materials. A further problem is that projects of textbook production or distribution frequently fail to include sufficient attention to teacher training, an extra cost that is too often overlooked in the planning and budgeting stage.
 - *A technology for assessing and monitoring education quality at the school level.* To help monitor and sustain continuous improvements, there is a need at all levels, but particularly at the local level, for practical technology and, within contexts of decentralization, for participatory decision-making processes. Head teachers, for example, in order to provide leadership and mobilize community support, should be able to assess the quality of their schools and use such information in local strategic planning. Improving quality and efficiency at the classroom and school levels depends on, at a minimum, information on actual and feasible teaching and learning conditions. 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 the environment. For example, education ministries may prepare checklists reflecting government interpretation of the basic requisites for schooling, e.g., adequate facilities, availability of instructional materials, and qualification of teachers.

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 insights into the meaning and implications of the conditions observed. Nevertheless, such indicators may provide benchmarks that encourage worthwhile improvements. Several different evaluation and monitoring schemes of varying complexity are currently being used in a number of developing countries (Horn 1992, Heneveld 1994).

b. Conditions and Processes for Sustaining Education Improvements

It is being increasingly accepted that lasting improvements 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 compliance and can facilitate major adjustments in the design, scope, and delivery of education services, but rarely are they sufficient to foster fundamental changes in teaching and learning. Box 3.2 lists some of the local and school conditions that increase the likelihood of sustaining improvements in teaching and learning.

New programs or projects—national or local, domestically funded or in partnership with international agencies—tend to pose more problems in their sustainability than in their initiation. 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 three basic conditions are necessary: (i) stakeholders need to agree on the need for, and acceptability of, the new program or project; (ii) local parents, teachers, and other stakeholders must have an understanding of, and commitment to, the changes; and (iii) school-community organizations that are able to mobilize resources and plan strategically can be developed.

Box 3.2: 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. Also necessary is a redefinition of the process of initiating and sustaining education change 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:

- Information to interpret the meaningful internal and external environment of the school. The existing and potential influence of this 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 achieve the school's objectives?*
- 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 to help achieve the various learning and performance targets?*
- Information on the somewhat unpredictable process involving a range of community stakeholders in transforming insights into effective school practice and context into acceptable school and classroom interventions. *Which potentially useful changes or innovations make acceptable demands on the teacher?*
- 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?*
- Continued sense of ownership of the new practice by teachers and administrators. *What are the indicators of ownership, or lack of it?*
- 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 devolved to the school-level in order to improve quality?*

B. Increasing Equity and Access

Held in Jomtien, Thailand, the 1990 World Conference on Education for All (EFA) yielded a landmark declaration that universal access to

quality primary education should be achieved in all countries by 2015. In reviewing progress toward this Jomtien resolution (one of seven, widely recognized “international development targets”), a United Nations Children’s Fund (UNICEF) publication noted that in 1996, “After six years and billions of dollars of investment it is difficult to satisfactorily confirm whether there are proportionately more children attending school than in 1990; whether the gender gap has narrowed since 1990; and whether those enrolled for five years or more can demonstrate mastery of life-relevant basic skills.” Focusing on South Asia the report concludes, “Official enrollment figures are frequently inconsistent with the numbers of children regularly attending classes [and] do not include children who are too difficult to enumerate” (Irvine 1998).

Bearing in mind the serious limitations of available statistics, a summary of issues, trends, and strategies related to equity and access to education is tentatively suggested. The following types of equity serve as a framework for examining current conditions and considering responsive strategies among DMCs.¹⁸

- *Gender-related equity.* The opportunities of the traditionally disadvantaged gender group, i.e., females, in their access to various levels of education, in their opportunities for success in education, and in their opportunities for making use of education as an asset for enhancing their life chances.
- *Income-related equity.* The financially disadvantaged group (i.e., the income-poor) in their access to various levels of education and their opportunities for success in education.
- *Locality-related equity.* The education opportunities of people living in disadvantaged regions, most often rural groups, but in some cases income-poor within urban areas.
- *Sociocultural equity.* Education opportunities for socioculturally disadvantaged groups. In addition to ethnic minorities, women often suffer from similar forms of “marginalization”, as noted above.

1. Gender-Related Equity

The UNDP *Human Development Reports* for 1996 and 1997 observe that (i) no society treats its women as well as its men; (ii) gender inequality is strongly associated with human poverty;

¹⁸ The framework of analysis follows the classification found in ADB 1994a, p. 13.

(iii) gender equity is not necessarily associated with high economic growth (Box 3.3); and (iv) the countries showing a marked improvement in their GDI ranks relative to their HDI ranks are fairly diverse economically and culturally. Thus, the reports state, improvements in gender equity can be achieved across income levels, political ideologies, cultures, and stages of development (UNDP 1996b, pp. 32–33; UNDP 1997, pp. 39–40).

a. Education Change and Persistence of Inequality

Despite a general improvement in literacy rates in DMCs, the number of female illiterates grew from 392 million to 446 million between 1970 and 1990. Many illiterate people in DMCs come from South Asia. In Bangladesh, India, Nepal, and Pakistan, women’s illiteracy rates exceed those of men by 20 percentage points or more (UNDP 1996b, 1997). Generally, however, the ratio of female to male enrollments in first-level education in DMCs is approaching parity. East Asia’s “Four Tigers” (four of the Group 2 DMCs listed in Table 1.8) reached parity by about 1980. Elsewhere, in Mongolia, primary enrollment rates were even slightly higher for girls than for boys at 1.1:1 by 1990. But boys’ primary enrollment rates remain distinctly higher in several DMCs, including Afghanistan, Bangladesh, India, Lao PDR, Nepal, Papua New Guinea, and Solomon Islands. Enrollment data demonstrate that access to primary-level education remains a serious problem in several DMCs (Table A1.1).

Except in Cambodia, where the girls’ retention rate was 42 percent,

Box 3.3: Gender Disparity

Across and within DMCs, gender disparity is not only a phenomenon of poverty. The relationship between per capita income and gender disparities in health and education outcomes is not robust. So although absolute levels of health and education outcomes for girls are strongly related to economic conditions, the disparities between outcomes for girls and boys are not (Filmer et al. 1998).

compared with 56 percent for the boys, there appear to be no highly distinctive gender differences in retention rates across DMCs. In some cases, girls’ retention rates are higher than the boys’, but this statistic may be interpreted to mean that the girls who are allowed to enter school have a higher tendency to follow through with their education. Chuard and Mingat (1996, p. 3) point out that both boys and girls in

South Asia suffer from the relatively low coverage of primary education, but that the situation of girls' access is especially serious, given that gender differences are generally strong there.

At the secondary level, the gender gap is most obvious in completion rates. Available data show that in Indonesia and the Marshall Islands, the completion rate for secondary education for boys is two or three times higher than for girls. There are, however, a few DMCs where the completion rates are close to equal, including the PRC, Fiji Islands, Korea, and Viet Nam. Over time, a clear trend of improvement can be seen. For example, the ratio of male/female completion rates in India dropped from 4.1 in 1970 to 3.1 in 1980; and in the Maldives from 3.0 to 1.0 between 1980 and 1990. However, the overall trend notwithstanding, there is evidently a dramatic variation across DMCs in gender equity in secondary schooling, with ratios of male/female completion rates as high as 9.9 in Afghanistan, 6.2 in Bangladesh, and 5.6 in Nepal in 1980.

It is generally true that the share of female students in total enrollment is generally highest for primary schooling and lowest for tertiary education. For example, both Indonesia and Viet Nam had achieved near gender parity in primary schools by 1994—females accounted for 48 percent and 47 percent, respectively, of primary enrollments. However, women accounted for only 32 percent and 30 percent, respectively, of tertiary enrollments in the same year. The distinction is even sharper in Bangladesh: females constituted 45 percent of primary enrollments but only 16 percent of tertiary enrollments in 1990.

Moreover, while UNESCO (1993c) groupings of developing countries do not directly correspond to DMC groupings, time-series data therein indicate that female representation in higher education as a whole has only improved slightly. Between 1980 and 1990, the share of females in tertiary enrollments increased from 36 percent to 39 percent in Eastern Asia/Oceania, and from 26 percent to 29 percent in Southern Asia. The increase in female representation in the PRC is noteworthy, rising from only 23 percent in 1980 to 33 percent in 1990. Overall, however, significant gender gaps in tertiary education are expected to persist at least through the year 2010 (UNESCO 1993b).

Despite the paucity of time-series data, available figures for shares of adults (age 25 and above) who are university graduates suggest that gender gaps have slowly improved, but remain sizable. In addition, progress appears to have slowed somewhat. ADB (1993b) statistics

Box 3.4: Gender-Related Equity

Summary observations across DMCs indicate the following:

- The growth in the size of the illiterate population is particularly attributable to the increase in female illiterates.
- In most DMCs, the proportion of female illiterates is larger than that of male illiterates.
- Primary gross enrollments in the majority of DMCs approached gender parity in the 1980s.
- About half of DMCs approached gender parity in secondary enrollments in the 1990s.
- Gender disparity is more obvious in tertiary enrollments, which typically favor males.
- Gender stereotyping is found in tertiary fields of study, with females focusing on humanities and social sciences and males focusing on mathematics, science, engineering, and architecture.
- Although well represented in some DMCs in professional occupations, in most DMCs females are underrepresented in management and leadership positions.
- In spite of gender disparity in wage rates, the impact of additional schooling on earnings is higher for females than males.

indicate that male/female ratios declined from 5.9 to 3.1 and from 8.0 to 3.2 in Korea and Indonesia, respectively, during the period of slightly more than two decades prior to 1993, but that little (if any) of this narrowing occurred after 1980.

Males and females tend to cluster in different fields of study at the tertiary level of education, which may have implications for their occupational opportunities in future. In Kiribati, for example, females account for 100 percent of enrollment in home economics, 85 percent in library studies, and over 50 percent in such social science subjects as education, geography, history, politics, and sociology. Subjects that may lead to more lucrative employment, such as science, technology, and economics, are dominated by males. Moreover, the female share of overseas scholarships for higher education or training in 1993 was about half the male share (Emberson-Bain 1995, pp. xv, 22).

b. Implications for Strategy and Policy

These observations suggest that a comprehensive approach is needed to ameliorate existing inequalities in education within the DMCs. At a minimum, strategies must combine action in at least two broad areas:

- *Raising retention rates.* Specific strategies to raise retention rates are required to tackle different kinds of constraints, such as constraints in supply, demand, and classroom learning (Loxley 1997, p. 24). Expanding the number of schools, placing the best teachers in early grades to give children a good start, parental involvement, community participation, peer tutoring, and incentives to reduce absenteeism of teachers and students are all appropriate actions.
- *Development of policies and programs that are more gender specific.* When presenting policies on gender equity, it is common for DMCs to justify equity by legislative availability of equal or open access to education and employment for both genders. Such policies may increase access for both males and females. However, if women are a disadvantaged group, such gender-neutral policies can only be regarded as a passive measure (McDonald 1995, p. 55). Gender-specific measures to enhance females' access to education may include the following:
 - (a) affirmative measures to increase the share of females obtaining scholarships (it is often reported that external financial assistance of this kind is given disproportionately to boys);
 - (b) awareness campaigns for girls' enrollment, recruitment of female teachers, and increased access for girls. As policy measures, these are important to reduce gender disparity in enrollments (UNESCO 1996c, p. 6); and
 - (c) action planning with specific targets and incentives to attain gender parity in teaching, management, and policy making in the education system.

2. Income-Related Equity

a. Income Distribution and Equality

Extreme variations in income distribution persist within Asia and economic growth has not necessarily reduced income disparities. Some

Box 3.5: Education, Inequality, and Poverty

Two fundamental economic reasons suggest that the education systems in many of the less economically advanced DMCs are inherently inequitable, in the sense that poor students have less chance of completing any given education cycle than more affluent ones. First, the full private costs of primary education (especially in view of the opportunity costs of a child's labor to poor families) are higher for poor students. Second, the expected benefits of primary education are lower for poor students. Together, the higher costs and lower expected benefits of education mean that a poor family's rate of return from investment in a child's education is lower than it is for other families. The children of the poor are, therefore, more likely to drop out during the early years of schooling.

Why are costs higher and benefits lower for a poor child? The higher opportunity costs of labor to poor families mean that even if the first few years of education are provided by the state free of monetary charges, they are not without cost to the family. Children of primary-school age are regularly needed to work on family farms during daylight hours (i.e., in conflict with school attendance). If a child cannot work because he or she is at school, the family either will suffer a loss of valuable subsistence output or will be required to hire paid labor to replace the absent child. In either case, there is a real cost to a poor family that has an able-bodied child attending school when there is productive work to be done on the farm. This cost is not related to tuition and is of much less significance to higher-income families, few of whom are engaged in agriculture or are likely to rely on income from children's involvement in urban informal sector activities.

As a result of these high opportunity costs, school attendance and, therefore, school performance tend to be much lower for children from poor families than for those from higher income backgrounds. Thus, in many of the least economically advanced DMCs, despite policies for free and universal primary education, children of the poor (especially the rural poor), are often unable to complete primary schooling, to say nothing of proceeding into lower secondary schooling (Todaro 1997, p. 396).

DMCs, e.g., Korea and Taipei, China, achieved significant growth with relatively low disparity in income distribution. Limited data further suggest that between 1985 and 1995, economic growth in some other economies, e.g., Bangladesh and India, was accompanied by a reduction in income disparities, while in others, e.g., Indonesia and Malaysia, such disparities increased. Economic liberalization seems, at least in the early stages, to be associated with growth of income inequality. As measured

by the Gini coefficient,¹⁹ inequality was fairly low in Sri Lanka, which had a Gini coefficient of 0.35 when the country began to liberalize its economy in the late 1970s; however, this had grown to 0.51 by 1990. Data from Deininger and Squire (1996) show that in 1975, prior to initiating liberalization measures, Sri Lanka's income distribution was fairly equitable, with a Gini coefficient value of 0.38. However, inequality initially showed a substantial increase, with a Gini coefficient of 46.2 in 1985, before a significant reversal in the latter half of the 1980s to 30.1 in 1990. Likewise, UNDP (1996b) notes that PRC's Gini coefficient was 0.33 in 1979, lower than in any other East Asian country.²⁰ However, after a decade of economic liberalization and growth, it had risen to 0.38, exceeding values for Indonesia and Korea. Inequality continues to rise in the PRC: as the coastal areas—most directly affected by export-oriented economic growth—pull away from interior provinces in terms of average income, they also exhibit the largest (and growing) income variation internally (p. 59).

b. Equity in Intrasectoral Resource Distribution

Intrasectoral inequalities in resource distribution may aggravate the problem of inequalities in income distribution. As consumers of higher education generally belong to a higher socioeconomic group, the share of education resources in higher education, compared with other levels of education, may illustrate how education financing is enforcing their socioeconomic advantages. For example, in South Asia, less than one quarter of public resources for education are devoted to primary education, comprising 81 percent of the student population, whereas the higher education subsector accounts for only 4 percent of overall student enrollment but receives 39 percent of total public education resources. In East Asia and the Pacific, 57 percent of the student population (those in primary education), receive less than one fifth of the resources, while the 9 percent of students enrolled in higher education enjoy 40 percent of total resources spent on education

¹⁹ The Gini coefficient (or ratio) can vary from 0 (perfect equality) to 1 (perfect inequality). For countries with highly unequal income distributions, it is typically over 0.50. Below 0.35 is considered a relatively equitable distribution.

²⁰ UNDP (1996b) introduced a multidimensional measure of human deprivation, known as the capability poverty measure, as distinguished from income poverty. This measure considers the lack of three basic capabilities, i.e., nourishment and health, healthy reproduction, and education (particularly in relation to female literacy). UNDP notes that in most countries in South Asia, capability poverty is more widespread than income poverty.

(Mingat and Tan 1985, p. 305). More recent data available for eight DMCs—PRC; Korea; Lao PDR; Malaysia; Nepal; Philippines; Taipei,China; and Thailand—indicate smaller but still substantial imbalances in comparing public resources vis-à-vis total (public and private) enrollments by level. On average in 1995, just below 43 percent of public education expenditures in these countries went to the primary subsector versus roughly 14 percent to tertiary education, though the former accounted for seven times as many students, 55.5 percent versus 8.0 percent of the total student population (calculated using data from UNESCO 2000 and country sources).

c. Financial Burdens on the Poor: Fees, Opportunity Costs, and Cost-Recovery Practices

Although primary education in DMCs is officially free of charge, there are unofficial levies that put financial burdens on income-poor parents. Moreover, official fees and cost-recovery practices are increasingly found at the secondary and higher education levels. Both an ADB report on human development in Viet Nam (1996g) and a World Bank sector study (1996c) express some concern that the introduction of user charges has exacerbated access barriers for poor families. Furthermore, as described in Box 3.5 above, fees add to often substantial opportunity costs of schooling (i.e., children's time could be spent in contributing to the family through unpaid or wage-earning labor), decreasing the likelihood that poor parents choose to enroll school-age children.

d. Implications for Strategy and Policy

The preceding discussion and the observations in Box 3.6 underscore the need for actions in two key areas:

- *Government intervention to ensure access for the poor.* Effective government intervention is needed to ensure access of the poor to resources and education facilities. Walton (1990, p. 4) points out that the effectiveness of a national development strategy is strongly influenced by the extent to which public policy and intervention take account of the needs and circumstances of the poor and involve them in the design and implementation of programs. Success in poverty reduction in all types of countries has been associated with a combination of strategies that directly create income-earning

Box 3.6: Income-Related Equity

Summary observations across DMCs suggest the following:

- Despite declines in poverty (particularly in the NIEs, PRC, and the rapidly growing economies of Southeast Asia), Asia still accounts for roughly two thirds of the world's 1.2 billion population living on less than \$1 per day. Poverty incidence rates are highest in South Asia—the total headcount of the poor there has actually increased since 1987, and the subregion lags behind in several key socioeconomic indicators (ADB 2000b).
- The proportion of the income-poor has declined in the last two decades, but the number of income-poor has increased.
- The Gini coefficient in many DMCs falls within the range of 0.30 to 0.40; a general decline in income inequality is apparent, but some countries have widened income inequality.
- “Non-income” poverty (i.e., lack of opportunity or capability) is a more prominent phenomenon than income poverty in DMCs.
- Enrollment rates of the income-poor are notably lower than those of the nonpoor and the higher the level of education, the wider the gap between enrollments of the poor and nonpoor.
- Poor females are the group most vulnerable to school nonattendance and noncompletion.
- Households are facing increasing pressures related to financial contributions for education, which may already pose a considerable barrier to school attendance for the income-poor.
- In addition to monetary costs and low perceived returns to schooling (especially where school quality is low), high opportunity costs constitute a significant barrier to education for the income-poor both in rural areas and in rapidly industrializing areas.

opportunities for the poor and offer strong support for human resource development.

- *Efficiency of targeted government subsidies in redistributing income.* In many DMCs, subsidies for the poor are, in fact, more accessible to the nonpoor. For example, public schools and health care facilities tend to be located in cities and closer to the nonpoor, and even with the same accessibility of services and facilities, the nonpoor tend to use those services and facilities more than the poor because of greater awareness of them. Lucas and Verry (1996, p. 570) observed that the expansion of tertiary education in the 1980s in Malaysia benefited the relatively wealthy within each community rather than the poor. However, it is possible to adopt

pro-poor policies on subsidies, such as channeling the largest share of subsidies to primary and lower secondary education, and to literacy programs.

3. Locality-Related Equity

An ADB paper (1995a, p. 49) on the development experience and agenda in Asia emphasizes that subnational disparities in resource distribution and development in many DMCs are a matter of concern (Box 3.7). Such disparities are often found in two forms: urban-rural gaps and disparities of economic opportunities based on location. An estimated 47 percent of rural people in South Asia are still living in poverty, compared to 36 percent of urban people (UNDP 1997, p. 42). Similarly, as discussed below, poverty incidence rates may reflect inter-locality differences in access to infrastructure, geographic proximity to domestic and export markets, climate and/or natural resource endowments, or similar factors.

Problems of gender-, income-, and locality-related equity are often closely related to one another, as illustrated by the population of rural poor females, the group facing the greatest obstacles to literacy and formal education. Moreover, the gap in literacy between urban and rural areas is typically wider among females than among males. Inequality in access to education is not only higher in rural than urban regions, but it also seems to have increased over time (Jayaweera 1991, Appendix 1, p. 2; McDonald 1995, p. 26; Gertler and Rahman 1994, pp. 155–6; Maitra 1985).

In addition to urban-rural divisions, particularly in large DMCs, other subnational gaps are based on geographic location, e.g., coastal regions versus inland regions in the PRC, lowlands versus uplands in the Lao PDR, the central region versus other regions in Indonesia, and the hilly regions versus Terai in Nepal. In Nepal, for example, the Central Development Region has the highest concentration of university graduates—one graduate for every 102 people—whereas the population share of graduates in the other regions is many times less, e.g., 1 to 261 in the Eastern Development Region, 1 to 563 in the Mid-Western Development Region, and 1 to 542 in the Far-Western Development Region (RCEID 1997, p. 21). Disparities appear to be especially marked for female enrollments, which tend to be very low outside of the Central Development Region. In particular, the number of females entering

Box 3.7: Locality-Related Equity

Summary observations across DMCs indicate the following:

- Region-related equity is inseparable from equity related to gender and income. The most disadvantaged group in terms of access to education comprises poor rural girls.
- There is a notable gap in literacy, enrollment rates, and school completion rates between urban and rural areas.
- Urban female literacy rates may be many times higher than those in rural areas. The urban-rural gap is even wider in school completion rates.
- Few DMCs achieve close to equal enrollment rates between urban and rural areas, but even in these DMCs, the gap becomes distinct at the tertiary level, especially among females. (Across Asia, most higher institutions are located in towns.)
- Subnational disparities may also be related to differences based on proximity to political or economic growth centers, access to infrastructure and trade hubs, and areas' historical legacies of economic activity.
- Decentralization and liberalization of economic policies can aggravate subnational disparities in economic development and in education enrollments, and spur the migration of educated human resources to more prosperous areas.
- Migration of the labor force to more prosperous urban areas has created a large "floating" population—especially marked in the PRC—that places additional pressure on education provision in major cities.
- Differential subnational economic conditions have led to differential education expenditures among areas within DMCs, creating disparities in facilities and quality of programs across localities.
- Conditions of schools in rural areas are generally poor, and rural schools may not offer complete years of schooling, even at the primary level.

tertiary institutions in the Mid-Western and Far-Western Development Regions is negligible (Shrestha et al. 1990, p. 87).

Primary education in the Philippines is characterized by large gaps in cohort survival rates—the share of Grade I entrants who will complete the six year cycle—both between lower- and higher-income groups, and between rural and urban areas. Both the lower-income group and the group from rural areas have a survival rate of 57 percent, whereas the higher-income group and the group from urban areas achieve high rates—89 percent and 80 percent, respectively (Gertler and

Rahman 1994, p. 155). Income poverty was only 15 percent in the National Capital Region, but 56 percent in the province of Bicol in 1991 (UNDP 1997, p. 43). Regional differences often reflect low population densities and the prevalence of agriculture in certain provinces (e.g., southern provinces in the Philippines and western provinces in the PRC).

a. Implications for Strategy and Policy

- *Enhancing relevance of education and improving quality of schooling in rural areas.* Parents and children do not often see the relevance of schooling to their daily life, present work, and job opportunities. The successful experience in one poor rural area, the county of Conghua in Guangzhou, PRC, appears to have hinged on emphasizing vocational instruction in schools, and providing the types of skills training that are relevant to the needs of the area. Moreover, the local government encourages schools to establish close relationships with urban flagship or “keypoint” schools, which may provide assistance in the form of sending some of their better teachers to the rural sister schools, and providing training to local teachers and administrators. According to Lee and Li (1995), this has contributed to substantial improvements in both school quality and enrollment: the lower secondary enrollment rate in Conghua rose from 62.6 percent in 1986 to 95 percent in 1988 (p. 77).
- *Building partnerships and mobilizing local resources.* Part of the solution to subnational disparities in education is closer collaboration between the central and local governments to solve the problems of local schooling. Bangladesh and several other DMCs are testing an approach for developing community schools in which the government pays construction costs and contributes to teachers’ salaries, and the community provides the land and assumes overall responsibility for the school’s operating expenses. In Pakistan, an attempt has been made to establish education foundations in every province and nationally. Such foundations raise 50 percent of the costs of opening a new school from the private sector, NGOs, or community organizations (UNESCO 1996c).
- *Improving the distribution of international assistance across regions.* Because of the common requirement of working through central governments, international assistance may not reach the

poor. According to an ADB study of human development in Cambodia (ADB 1996h, p. 84), scholarships administered by the government are not distributed according to means-testing (i.e., applicants are not required to demonstrate financial need). There is also some evidence that donor assistance for education has been disproportionately directed to more developed areas of the country, despite the greater needs in disadvantaged areas. Per capita assistance received in Phnom Penh is eight times higher than that received in other areas. For equity improvement, governments need to implement and monitor specific strategies in the allocation of aid to the neediest areas.

4. Sociocultural-Related Equity

Of the many possible sociocultural-related inequities, discussion here is limited to ethnic minorities.²¹ Among the four categories of equity, sociocultural-related inequities are the most intractable: this aspect of equity involves values, beliefs, and cultural traditions that are fundamental to the behavior of particular sociocultural groups and to the policies of a government. Although there may be differences in education opportunities between cultural groups in terms of access, participation, and life chances, not all minorities are bound to remain disadvantaged. For example, Koreans are the most literate minority in the PRC, and the Chinese outside the PRC in many cases are the advantaged minority. A summary of regional observations on sociocultural-related equity (including relevant gender disparities) is found in Box 3.8.

a. Implications for Strategy and Policy

Five strategies have been widely advocated as ways of promoting greater equity and access for ethnic minorities.

²¹ There can be many types of minorities within a society, as defined in economic terms (the income-poor), political or religious terms (dissidents), cultural terms (subcultural groups, those rejecting the dominant culture, sometimes termed deviants/delinquents), linguistic terms (those not speaking the national language), gender terms (in most cases females), ethnic terms (the ethnic minorities), etc. Moreover, sometimes the minorities can be the “majority” in terms of number (e.g., the income-poor), and in this sense, there can be the disadvantaged majority as well as the advantaged minority (e.g., the Chinese outside the PRC). Data on minorities are difficult to collect, as very few governments officially collect such data, especially in relation to equity and access in education.

Box 3.8: Sociocultural-Related Equity

Summary observations across DMCs suggest the following:

- Sociocultural conditions and traditions may be the most intractable obstacles to equity.
 - While there are quite successful minorities in DMCs, e.g., the Chinese outside the PRC and the Koreans in the PRC, in most cases, ethnic minorities are disadvantaged in terms of access to education, both in terms of enrollment and school completion. Moreover, minorities tend to be less represented in successively higher levels of education.
 - In most cases, minorities reside in remote or rural areas and are among the income-poor. The areas in which they reside are unfavorable for economic development, so minorities tend to suffer long-term poverty.
 - In addition to lingual barriers (i.e., lack of fluency in the national language), societal biases may spill over into the education system: at the minimum, educational achievement among minorities may suffer from reliance on curricula that do not respond to local cultures and socioeconomic conditions.
 - Subtle tensions between ethnic groups may pose a problem for further advancement of minorities in society.
 - Gender disparities are largely a sociocultural issue: where there is a choice, families give priority to boys for education.
 - The traditions of patriarchal society continue to make it difficult for females to improve their life chances, regardless of the state of the economy and their level of education attainment.
 - Gender stereotyping in the curriculum and in the choice of fields of study continues to pose limitations for life chances of females (Lee 1998).
- *Changing values, beliefs, and awareness of the privileged and disadvantaged.* If values and beliefs are fundamental obstacles to achieving equity in education, becoming aware of the need to change such values and beliefs is a precondition for removing the obstacles. An example of a policy commitment to value change is the recent deregulation of education policies in Taipei, China, which begins to reflect on, and allow for, aboriginal and vernacular education. Another example found in recent curriculum development activities of most DMCs is the revision of textbooks to avoid gender stereotyping.
 - *Bilingual education.* A common problem facing minorities is that the language spoken in school is not the students' mother tongue. In

their study of causes of school dropout, Chuard and Mingat (1996, p. 19) note that, in the case of Bhutan, 20 percent of pupils in Grade 4 were taught by teachers who could not speak their mother tongue. They further find that teaching in the vernacular is important for preventing dropouts. At the same time, it is clear that minorities' post-schooling employment prospects may be limited if they cannot master the national language, and some may even prefer learning the national language to their own (Mackerras 1995, p. 142–143). In this case, good monitoring of bilingual education is essential to allow the preservation of culture and pedagogic efficiency, as well as improving the life chances of minorities.

- *Training minority teachers.* Minority areas often suffer a shortage of trained teachers able to converse with students and parents in the local language. Recruiting prospective teachers from minority areas is one way to increase the probability that graduates of teacher training will be willing to accept assignments in those minority areas. However, experience suggests the need for additional incentive mechanisms to recruit (or retain) quality teachers for mostly rural minority communities.
- *Boarding schools.* Children who cannot attend regular school for geographic, cultural, or religious reasons may need boarding schools. Provision of boarding facilities (perhaps serving single-sex schools) may be particularly important for girls in rural areas, since parents are often reluctant to allow girls to travel long distances due to religious and social norms, or out of concern for their safety.
- *Scholarship programs.* Many minorities, particularly in rural areas, are economically disadvantaged. Special attention needs to be given to ensure that minority children are not excluded from school for financial reasons. Scholarship programs may provide direct incentives, such as cash payments to children who attend school, or may provide support more indirectly, through fee waivers and free textbooks. In either case, the goal is to reduce economic constraints on children's participation in schooling (Reyes and Evangelista 1992).

C. Choices and Strategies in Financing Education

Decisions in education reflect both the level of resources available to the education sector and the ways to generate those resources; these decisions must consider methods to maximize cost-effectiveness in education investment. Although basic questions related to finance may be similar across DMCs, particular issues vary by DMC or even by community. The intersectoral allocation of funds and the priorities in support among education programs are fundamentally expressions of value and evolve within national and local political processes. The focus of this section is on the choices and methods available in basic decisions for financing education. Critical attention is given to the use of unit costs, cost recovery, and cost-sharing techniques.

1. Unit Costs and their Determinants

In many of the DMCs, unit costs²² vary dramatically across education level and type, and also by locality. Unit costs of higher education may be 20 times those of primary education, and science and technical courses typically have considerably higher unit costs than humanities courses (Bray 1998). Table 3.4 provides one comparison of costs per student by education level for the PRC, referring only to recurrent costs for the school year starting in 1994 (i.e., excluding budgets for capital investments, which are more difficult to divide across years). Estimated figures in column 1 indicate that total recurrent unit costs—16 to 38 percent of which is financed by families (i.e., via direct fees), communities, sponsors, and other nongovernment sources—were 4.3 times as high for vocational secondary education as at the general elementary level; per pupil recurrent costs for regular higher education are still higher, at 17.7 times the figure for general elementary education. The chief explanations for greater unit costs at higher levels of education and in some specializations are that the teachers are paid more, class sizes tend to be smaller, and buildings and equipment are more elaborate at higher levels, particularly in some curriculum areas.

²² As used here, the term “unit cost” means the cost of a school place occupied by a single student for one year (Coombs and Hallak 1987, p. 51). However, this definition says nothing about attendance (i.e., whether pupils actually occupy the spaces allocated to them). Nor does the definition say anything about the quality of teaching or learning. Nevertheless, unit costs are a useful benchmark and means of comparison for policymakers.

Even more striking, however, are the interprovincial variations within the PRC: average unit costs at the primary level in Beijing are more than five times the costs in Guizhou Province.

Many Asian systems of education are moving or have moved from mass primary to mass secondary education, and some are moving to mass tertiary education. Since unit costs tend to rise strongly with the level of schooling, this expansion implies that governments must assume substantially increasing financial burdens if equity in access is to be maintained.

Table 3.4: Estimated Recurrent Unit Costs by Level, People's Republic of China, 1994

| Level | Recurrent Unit Cost to Govt. (yuan) | Personnel Costs % | Total Recurrent Unit Cost (yuan) | Personnel Costs % |
|---------------------------|-------------------------------------|-------------------|----------------------------------|-------------------|
| General Elementary | 238 | 92.3 | 340 | 73.8 |
| General Secondary: Junior | 451 | 88.7 | 645 | 69.0 |
| General Secondary: Senior | 883 | 84.2 | 1,296 | 63.3 |
| Vocational Secondary | 842 | 80.6 | 1,307 | 57.5 |
| Specialized Secondary | 1,901 | 66.1 | 2,588 | 54.7 |
| Apprentice School | 1,188 | 63.3 | 1,912 | 48.9 |
| Regular Higher Education | 5,048 | 59.1 | 6,022 | 54.9 |

Source: Jiang 1996, p. 29.

a. Choices Informed by Unit Costs

Education policymakers have some discretion in influencing several key variables related to education costs, including teacher salaries, class size, physical plant and equipment, and organization of delivery of education. Teachers' salaries are generally the largest single item in education expenditures, ranging from 60 to 90 percent of public recurrent costs at the primary level. Teachers' salaries vary greatly throughout the Asian and Pacific region. Teachers are considered well paid compared with other professions in Hong Kong, China; and Singapore. In Cambodia, however, teachers are paid so poorly that an official salary is inadequate even for one person to live on, let alone a whole family. In many DMCs, teachers' salaries are so low that governments cannot make savings from further reductions in this area.

More feasible for policy adjustment is consideration of productivity and possible trade-offs among class size, hours per week of teaching, and salary. Teachers in some DMCs have, in effect, accepted larger classes as a means of obtaining higher salaries. Research on school effects does not show a strong or consistent correlation between class size and student learning within the range of 25–40 pupils (Table 3.1; Bishop 1989, pp. 73–4). Drawing from this evidence, national policy bodies and international agencies tend to argue that larger classes are a cost-effective choice. However, few educators would advocate pupil/teacher ratios of the scale evident in Bangladesh, namely, 63:1. Moreover, in all contexts other factors must also be considered in decision making, including teacher morale, which diminishes as class sizes grow.

The length of workdays and the duration of school years may also be manipulated. Table 3.5 shows data on the official numbers of class hours during the first four years of public primary education in 10 Asia-Pacific countries. Again the variation is striking, with the Philippines at the top, and Japan and Korea at the bottom. This contrast is especially surprising given the reputation that Korea has for much greater achievements in teaching and learning than the Philippines. Korean teachers are considered comparatively well paid, indicating perhaps the negotiating strength of the teachers' union.

Table 3.5: Official Class Hours During the First Four Years of Primary Education, Selected Countries

| Country | Grade 1 | Grade 2 | Grade 3 | Grade 4 | Total |
|----------------------|---------|---------|---------|---------|-------|
| Philippines | 1,000 | 1,000 | 1,133 | 1,200 | 4,333 |
| New Zealand | 1,000 | 1,000 | 1,000 | 1,000 | 4,000 |
| Australia (average) | 1,000 | 1,000 | 1,000 | 1,000 | 4,000 |
| Malaysia (estimate) | 902 | 902 | 902 | 963 | 3,670 |
| Singapore | 893 | 893 | 893 | 893 | 3,572 |
| Viet Nam | 840 | 840 | 840 | 840 | 3,360 |
| Sri Lanka | 760 | 760 | 760 | 1,045 | 3,325 |
| Indonesia (estimate) | 570 | 570 | 963 | 1,013 | 3,116 |
| Japan | 638 | 683 | 735 | 761 | 2,816 |
| Korea | 507 | 544 | 589 | 612 | 2,252 |
| Average | 811 | 819 | 882 | 933 | 3,444 |

Source: Amadio 1997, p. 6.

Cost savings may be made through reductions in nonteaching personnel and the adoption of various technologies. For example, at the primary level in the Lao PDR, nonteaching staff consume only 9 percent of the public recurrent budget, but in technical-vocational education they consume 13.8 percent, while corresponding figures for preschools and teacher education are 16.4 percent and 35.5 percent (Mingat 1996, p. 16). Other tools that planners can consider, for securing the maximum efficiency of education systems, include operating multigrade teaching, biennial/triennial intakes for small schools in remote areas, provision of boarding to make schools larger, and use of self-instructional materials for at least part of the curriculum (Coombs and Hallak 1987, Windham 1988, Bishop 1989, Chapman 1993, Kumar 1995).

The costs of physical facilities may be subject to scrutiny. Studies of the effectiveness of teaching and learning indicate that once basic needs are satisfied, further investment in construction is unlikely to yield strong dividends in improved teaching and learning. The portfolios of education architects now contain many designs that can achieve clean, safe, bright, and well-ventilated classrooms at reasonable cost. Community decision making does not always lead to the best designs or to maximum cost-effectiveness, but experience in many DMCs has shown that costs can be kept down by making good use of local materials and community inputs.

b. Dropout and Repetition Rates: Unit Costs per Graduate

When the focus shifts to the cost of producing graduates, as opposed to the cost of providing a place for a student for a single year, the significance of dropout and repetition rates comes into focus. Although the reduction of dropout rates over the last two decades has been significant in Asia, the gains in some individual DMCs have not been so impressive, and many systems in the region display considerable internal inefficiencies. In Bangladesh, for example, only 52 percent of pupils entering Grade 1 in the early 1990s reached Grade 5 (Loxley 1997, p. 24). In Nepal, the equivalent figure was 50 percent, and in Bhutan, 32 percent. Figures for several DMCs shown in Table 3.6 indicate that the shares of Grade 1 students reaching Grade 4 have generally improved, but also demonstrate a considerable degree of variation across countries.

These figures suggest that renewed efforts were needed to reduce dropout rates and improve efficiency. A good starting point for most

systems would be publicity campaigns to explain to teachers why the authorities see dropping out as a problem. Dropout rates are influenced by out-of-school factors, such as general poverty and parents' perceptions of the role of schooling in improving the quality of life. However, in-school factors are also important. Many teachers see dropping out (or pushing out) as a solution rather than a problem, because it is a way to reduce class size and remove pupils whom they regard as troublesome or poor performers.

Table 3.6: Proportion of Grade 1 Students Reaching Grade 4, Selected Developing Member Countries (percent)

| Economy | Around 1980 | Around 1990 |
|----------------|--------------------|--------------------|
| Bangladesh | 32 | 51 |
| PRC | 75 | 89 |
| India | 45 | 68 |
| Indonesia | 75 | 88 |
| Malaysia | 99 | 98 |
| Pakistan | 42 | 52 |
| Philippines | 66 | 79 |
| Sri Lanka | 99 | 99 |
| Thailand | 86 | 91 |

Source: Mingat 1995, p. 11.

Of course, if keeping children enrolled means increasing grade repetition, this poses additional burdens on schooling systems. Despite the efforts of many educators and international agencies, repetition rates remain very high in some systems. Often, children are asked to repeat classes for well-intentioned reasons, including maintenance of overall standards and strengthening their foundation of learning. However, children who have to repeat classes may be wasting their time and raising unit costs for government and society. Also, children who have to repeat classes are more likely to drop out. A better approach, therefore, is to minimize unnecessary repetition, while simultaneously trying to ensure that all children attain a minimum acceptable level of achievement. Such a policy can be justified on education as well as economic grounds.

c. Distance Education

Like their counterparts in other regions, many Asian institutions have increasingly made use of distance learning as a supplement to, or a replacement of, face-to-face teaching. Since the early 1980s, distance education has expanded rapidly in Bangladesh; PRC; Hong Kong, China; India; Indonesia; Japan; Korea; Pakistan; Philippines; Sri Lanka; Thailand; and Viet Nam (ADB 1987, 1990; Wong 1993; Dhanarajan 1996). Comparative research in DMCs consistently shows that unit costs in distance education are substantially less than those in conventional institutions. Such research is limited to the relative qualities of the two modes of delivery and of the labor market outcomes of graduates from distance education programs. However, Dhand (1996) has highlighted serious deficiencies in the effectiveness of Bachelor of Education degrees offered by distance education in India, and it is likely that many of Dhand's remarks will find resonance in other contexts. Nevertheless, it seems certain that distance education will become an increasing feature of higher education in Asia, much as in other parts of the world.

Financing options may vary by level of education and type of problem or objective. An illustrative summary of problems and associated financing options is found in Table 3.7.

2. Cost Sharing in Education

a. Changing Frameworks for Policy

Education is generally accepted as a public good that can benefit societies as a whole and individuals (Levin 1987, Solmon and Fagnano 1995). This belief underlies a pervasive commitment to compulsory and free primary education. However, arguments in favor of fees for postbasic secondary and tertiary education are increasingly found in international literature. Especially for tertiary education, opinion appears to favor fees, supported as necessary by loans and other mechanisms to protect the poor (Ziderman and Albrecht 1995, Tilak 1997a). Arguments in favor of fees may be based on concern for equity. Students from rich families always form a much larger proportion of tertiary enrollments than students from poor families, and it is widely considered unreasonable to subsidize rich families when that will reduce resources available for allocation elsewhere to the poor.

Table 3.7: Demand-Side Education: Problems and Financing Options

| Problem | Education Level | | |
|---------------------|---|----------------------------------|---|
| | Primary | Secondary | Higher |
| Finance | Vouchers. Targeted bursaries. | Vouchers. Targeted bursaries. | |
| Management capacity | Community financing. Community grants. Foreign aid. Mixture of private funding and government grants. | Funding and government grants. | International assistance. |
| Efficiency | Parental financing. Vouchers. | Parental financing. Vouchers. | Parental financing. |
| Equity | Assistance to private schools. Stipends. Scholarships. Targeted bursaries. Deficit financing. Taxes/earmarked taxes. | | Student loans. User charges. Scholarships. Use of cosigners. |

Source: Patrinos and Ariasingam 1998.

The cost and equity arguments are also, to some extent, valid in secondary education and can be used to justify cost recovery at that level. However, unit costs to government are lower at the secondary level, and enrollment rates across socioeconomic groups are usually more balanced. These particular arguments are, therefore, less powerful at the secondary level than at the tertiary level.

At the primary level, where unit costs are generally lowest, the arguments for full cost recovery are even less tenable. Even in countries where primary-level enrollment is far from universal, poor and middle-income groups (as well as other disadvantaged populations and females in general) are likely to be much better represented than at higher levels of schooling. Moreover, virtually all governments claim to promote increased access for poor and under-served groups to primary school, and thus are willing to bear the burden of subsidies. In practice, tuition charges and fees for materials, etc. are frequently compounded by substantial hidden (often illegal) charges, exacerbating the disincentive effects of opportunity costs for poor students and girls, as noted above. Finally, empirical evidence indicates that primary education

(particularly for girls) has high social returns and substantial spillover benefits—in contrast to higher education, where benefits accrue primarily to the individual—providing a final justification for highly subsidized (or free) primary education, and for efforts to eliminate hidden charges (Mingat and Tan 1996).

b. Political Forces and Budget Constraints

The above arguments would seem to favor charging fees for tertiary education to permit redistribution of resources to the poor. One way to serve the poor better, it has been argued, is to place greater proportions of government resources in the basic education sector (Colclough with Lewin 1993, Tan and Mingat 1992, Penrose 1993, World Bank 1995a). However, political forces may not easily permit governments to demand substantial cost recovery at the tertiary level, especially where university students are familiar with a long legacy of free provision, come from politically well-connected families, and are prepared to make vocal protests. Moreover, even when governments do recover some of the costs of tertiary education, it is not always easy to allocate these resources to primary and secondary education rather than to other sectors of public expenditure. Finally, it may be difficult to design and implement mechanisms to ensure proper targeting of scholarship and loan programs for tertiary education to provide access to the poor. The recent experiences of Nepal (see Box 3.9) illustrate several of these challenges.

Such challenges are compounded by the acute budget austerity that has hit many governments during recent years, which is unlikely to be alleviated in the near future. The economies of many low-income countries have suffered severely from natural disasters, structural weaknesses, external debt, and stagnation or decline in government revenues as well as from continued rapid population growth. The last decade has brought particularly severe economic difficulties to the former and remaining socialist states, and pressures have also been heavy in many capitalist societies. The result of these forces is that although most governments would like to be able to provide fee-free primary and secondary education—and some even enshrine this in their constitutions—practical constraints necessitate the collection of at least some contribution from parents and communities.

Box 3.9: Fees and Cost Sharing in Nepal

The Government of Nepal, like governments in many other countries, has favored fee-free schooling to improve equity and access for the poor. At the secondary level, implementation of the policy began in 1992. However, the abolition of fees in public schools has not had the desired effect. Since the Government was unable to give schools the resources they needed, institutions have been forced to demand all sorts of substitute payments. In many cases, whereas in the old system the burden of fees was spread over the year, the replacement payments are demanded as single lump sums. As has been noted: "The irony is that people were paying nominal fees spread over the twelve month period to schools and now as a result of free education they have to pay substantially more and in one installment. ... [Payments are demanded] from everybody irrespective of economic condition. This raises a serious question of equity in education" (RCEID 1997).

A further problem is that communities have been unable to contribute adequately to education, not only because of poor economic conditions but also as a result of what Bajracharya et al. describe as inappropriate government policies that have discouraged contributions. And since the public schools, partly as a result of these policies, have become so starved of resources, many parents have abandoned them for the private sector, where quality is better.

At the university level, ironically, fees are lower than at the secondary level. University fees have not been raised in line with inflation, and they do not reflect the cost of education programs. The proportion of people who can afford to pay fees for university is greater than for secondary schools. A strong case exists for raising university fees, accompanying the measure with loans and/or grants to maintain access for the poor.

c. Forms of Cost Sharing

In addition to the use of fees or levies, some education institutions gain income from factories, businesses, and other enterprises. This was especially common in socialist societies during the period of central planning when factories were seen as part of the social fabric of their localities. The advent of market economies has required enterprises to pay more attention to profits and, in many instances, has reduced their willingness to contribute to schools. However, even in long-standing capitalist societies, examples of enterprises contributing to schools may easily be found (Martin 1996).

An increasingly popular form of cost sharing involves communities, which may be based on geographic proximity, religion, or ethnicity. In several DMCs, community financing reaches significant levels. For example, in Bangladesh, government primary schools accounted for only 48.7 percent of all formal primary schools in 1993. In the PRC, 19.1 percent of all primary and secondary teachers in 1994 were *minban* (community-supported) teachers, most of whom were employed by collectives and village communities (Jiang 1996, p. 19).²³ In Bhutan, 101 community primary schools in 1996 operated in parallel with 154 fully government primary schools and just 20 government junior high schools (Government of Bhutan 1996, p. 1). In Nepal, 18 percent of secondary schools in 1991 were operated by communities with little or no support from the Government (World Bank 1994b, pp. 2, 4).

Cost-sharing and cost-recovery mechanisms can affect both education supply and demand. Financial strategies are one way of influencing household and individual decisions. Some of the demand-side problems and financial incentives are identified in Table 3.8.

d. Alternatives to Cost Sharing

The chief alternative to cost sharing is a system of taxation that generates sufficient revenue for the government to pay for services. Burgess argues that taxation is the only sustainable way to finance basic education in less-developed countries. Aid, debt, and inflation finance, he points out (1997, p. 309), are not sustainable and may ultimately reduce financing capacity. Contributory social security schemes are not a promising source of additional funding for most developing countries, and he argues (p. 342) that the bulk of additional finance should come from broad-based domestic indirect taxes such as value-added taxes. Direct taxes, he suggests, are less suitable, both because of difficulties in implementation and because of their limited scope for achieving redistribution.

A compromise policy, which at least allows taxpayers to know precisely where their money is going, is to impose taxes designated specifically for the education sector. This is a common practice in the PRC, where many local governments have taxed enterprises either on

²³ With the recent trends toward privatization (especially in vocational, tertiary, and continuing education) the term *minban* encompasses private institutions in much of the literature. For clarity, *minban* is used herein to connote those teachers and schools that are directly supported (including in-kind contributions) by local communities, often in more remote rural areas.

Table 3.8: Implementing Demand-Side Finance and Generation Incentives

| Problems | Demand-Side Finance and Generation Incentives | Issues to Consider During Implementation |
|---|---|--|
| Direct costs | Tuition waiver/fee exemption; student loans. Mixture of private funding and government grants. | Schools may charge other fees; need a functional loan collection system. Mix must not have negative impact on poor students. |
| Indirect (opportunity) costs | Vouchers. Scholarships. Stipends. | Selective admission policy, socially divisive, transportation costs. Scholarships may be misused; school may increase tuition and fees. Stipends may be misused or may not reach target group because of local politics. |
| Infrastructure | Community financing. | Sustainability. |
| Low valuation of school investments (in girls, for example) | Social marketing. | Marketing must reach target population. |
| Language | Bilingual education. | Some languages may be left out; socially divisive. |
| Distance | Community grants. | Sustainability. |
| Exclusion | Curriculum change. | Too much watering down of curriculum or movement away from core curriculum; socially divisive. |

Source: Patrinos and Ariasingam 1998.

their total volume of business or on their profits (Lewin and Wang 1994, p. 29). Local governments may also raise revenue from farmers, government employees, and building owners.

e. Cost Recovery and Student Support in Tertiary Education

As the 1990s progressed, tuition fees increased in some parts of Asia. Having already imposed uniform fees across all public institutions, Hong Kong, China extended earlier fee increases for tertiary schooling made in the late-1980s, raising fees from 12 percent of recurrent costs in 1991 to 18 percent in 1997. Fees have also greatly increased in the PRC. Although fees were reported at less than 10 percent of recurrent

costs, many institutions began to reserve a portion of slots for “self-sponsored” students, based on their ability to pay considerably higher fees. As a result, Zhang (1997) estimates that average fees in many institutions were between 25 and 30 percent of recurrent costs. Authorities sought to standardize the situation, setting a guideline that in 1997 fees should meet 20 percent of recurrent costs (World Bank 1997a, p. 47). In Singapore, differential fees were charged by academic discipline. In arts and social sciences, fees were increased from 10 percent of recurrent costs in 1986/87 to 20 percent in 1992/93. The Government has declared its intent to raise fees further to 25 percent (Selvaratnam 1994, pp. 81–83), though it has also decided to set uniform fees rather than differential ones for individual clusters of disciplines.

People who oppose increases in fees usually do so mainly on the grounds that fees are likely to exclude individuals from the poorest segments of society. Part of the response by policymakers has been to provide an array of support schemes, including grants and loans. Grants may be linked, not only to the incomes of applicants, but also to academic performance and to efforts to attract students to particular types of training. Loan schemes usually contain a substantial proportion of hidden grants (Woodhall 1987, 1991, 1997; Ziderman and Albrecht 1995).

f. Institutional Revenue-Earning Schemes

In some DMCs, institutions have been increasingly required to secure additional funding from sources other than government budgets and various student fees. In Mongolia, for example, some schools manage their own flocks of sheep (ADB 1994b), and in the PRC, schools have run cafeterias and used buildings for discotheques and other forms of revenue-earning entertainment (Kwong 1996). Many institutions in Asia now solicit donations from their alumni. Many are also encouraging teaching staff and others to undertake consultancy services and some are moving into direct business ventures.

Because of location, urban institutions generally have greater opportunities to obtain such revenues than rural ones. However, in Viet Nam, rural institutions have been able to generate revenues by raising poultry, producing vegetables, managing restaurants, and tailoring clothes. Critics observe that such activities deflect the staff from their primary mission as specialized providers of higher education.

Advocates usually agree, but point out that at least the activities permit the institutions to survive in a harsh economic climate.

g. Privatization of Education

In some DMCs, the majority of private schools are expensive, elite alternatives to public schools. However, in other settings the majority of private schools may be “second-chance” institutions for individuals who have failed to gain places in public schools. Such private schools are commonly more expensive, but not always. Private institutions also include establishments for supplementary tutoring of students who also occupy places in public schools.

The available research suggests that private schools have generally achieved better results at lower costs and, as such, have been more cost effective than public schools (Jimenez et al. 1991, Lockheed and Jimenez 1994). To explain the differences in effectiveness, most authors highlight the importance of management practices. Lockheed and Jimenez (1994, p. 15) show that head teachers in private schools generally have more control over school-level decisions and are able to affect student achievement. This includes selection of teachers, adaptation of the curriculum, improvement of instructional practice, and choice of textbooks. Several studies have also observed that private schools are less constrained by the conditions of service and accompanying salaries that are mandatory in the public service. In India, for example, many private schools hire teachers with lower qualifications on lower salaries but who are not necessarily less effective than their counterparts in public schools (Kingdon 1994, p. 175).

3. Strategies for Particular DMC Groupings

- The most prosperous DMCs, those in Group 2 (Table 1.8), can meaningfully consider grasping new technologies for education on a wide scale, can aim to become global centers of expertise in certain aspects of research, and can afford to look after their citizens with disabilities and other disadvantages.
- Investment priorities in the poorest DMCs, as found in South Asia, are more likely to aim at raising enrollments than at improving quality, though, of course, the latter may be a route to the former. For these DMCs, investment in books may still be more important

and more cost effective than investment in computers; and while their governments may be attracted by philosophies of privatization, both as a way to improve efficiency and to help in sharing the cost burden, they should still aim to contribute more to the education sector than they currently do.

- The Group 3 middle-income countries, largely found in Southeast Asia, seek to identify the factors that have contributed to the East Asian “miracle”, including those that are linked to the rapid development of the education sector. Whether simple formulas can be distilled from the experiences of Group 2 DMCs is a matter of dispute (Mingat 1995, Morris and Sweeting 1995).
- The transition economies of Group 6, and to a fair extent also Mongolia, face the challenge of reorienting education systems within the broader framework of structural adjustment. In this process, comprehensive, long-term financial planning is needed to protect and promote human resource development, in addition to curricular changes to ensure that the schooling system meets the needs of the new market economy.
- The size of a country influences education problems and appropriate financial responses. The smallest Pacific DMCs, for example, may have to balance the comparative costs and benefits of operating their own institutions of higher education, with sending students abroad. In contrast, large countries can generate significant economies of scale that allow operation of highly specialized institutions.

D. Issues and Policies by Subsystem

A convergence of opinions on appropriate general priorities and broad strategies for education in support of economic growth and social equity has been well described, largely in the literature of international assistance agencies, such as ADB and the World Bank. The current recommended policy directions, although not without controversy, tend to emphasize universal basic education; privatization and public-private partnerships, particularly in secondary, higher, and technical-vocational education; special attention to girls’ and women’s education; decentralization, or at least the transfer of some of the activities of education planning and reform from the center to lower echelons of government; teacher and administrator professionalization; and the

search for multiple sources and channels for financing education. These priority recommendations are imbued with the pervasive policy and operational concerns of (i) improving education quality at the system, organization, and classroom levels; (ii) promoting equity in supply and delivery of education for all children and youth; (iii) increasing managerial effectiveness and raising institutional capabilities at all levels of education systems; and (iv) developing and effectively using multiple sources of financing.

Although the general rationale for these policies is clear and often persuasive, the precise nature of the necessary reforms is often less clear. Recommended policies and priorities for education may be sketched only in general terms, with necessary supporting environmental conditions only partly considered, while the constraints on implementation and use of new programs are rarely examined in depth. A major task for policymakers, planners, researchers, and international agencies is to unbundle these broad strategies and give them meaning within a particular context. And in this process of clarification, specification, and implementation of actions, the role of international agencies must be considered.

1. Preprimary Education

A substantial body of research suggests that preprimary schooling and early childhood education can have a strong, positive influence on success in subsequent schooling. It may be particularly effective in reducing subsequent primary school dropout rates among the poor. Preprimary schooling in DMCs is largely private, often delivered in a highly informal manner, and its availability is highly susceptible to economic conditions. The Group 6 DMCs are a case in point, as the transition to a market economy has had negative effects on preprimary education (Box 3.10).

Some cases of intersectoral cooperation among DMCs include components of preprimary and early childhood education. One case from the Philippines (Box 3.11) demonstrates a particularly innovative approach, where local governments played a key role in program success.

Box 3.10: The Negative Impact of Transition on Preschools in Central Asia

The Soviet period brought about the development of a strong public preschool sector in states of the former Soviet Union, including Central Asia. For example, in 1991 about half the children in the target age group attended preschools in Kazakhstan. The figure for Uzbekistan was 40 percent, and for the Kyrgyz Republic 33 percent (Klugman et al. 1997). The majority of these preschools were operated by enterprises, though some were operated by government ministries and local authorities.

The financial constraints of transition forced many enterprises either to divest themselves of preschools or to increase fees. Governments and local authorities faced similar pressures, with the result that many preschools were privatized or closed. In Kazakhstan, ADB figures (1996i, p. 63) show a decline in total kindergarten enrollments from 1.07 million children in 1991 to only 426,100 in 1995, while in Uzbekistan, the share of preschool-aged children enrolled fell from 30.7 percent to 19.5 percent between 1992 and 1996 (UNDP 1998b, p. 92). Likewise, the Kyrgyz Republic had 1,604 preschools in 1991 but only 448 by 1996 (ADB 1996j, p. 75). Many observers have stressed the far-reaching implications of such declines in access to preschools, given their important economic and social functions (Bray 1998, p. 45).

2. High-Quality Basic Education

It is a widely-held view that governments should prioritize basic education, and that all children, irrespective of whether they continue in school or enter the world of work, need literacy, numeracy, and citizenship skills. As employment opportunities move from agriculture to industry and the services sector, accompanied by increasing urbanization of the population, basic education increases in importance. As enrollment rates approach 100 percent, priorities move further from access to quality. Decentralization affects basic education especially, since this subsector is most likely to come under local responsibility. The uncertainty of the capability of local leadership, fragility of funding, search for cost-effective quality, changing managerial roles at all levels, and incompleteness of information for decisions, may combine to constrain local education development.

Basic education—defined broadly herein to include not only primary and lower secondary education, but also preschool and nonformal education (i.e., literacy, numeracy, and basic life skills training for adults and out-of-school youth)—provides a critical

Box 3.11: Integrated Early Education and Development in the Philippines

One program that successfully demonstrates collaboration among parents, teachers, and local government in planning and improving education service delivery is the Naga Early Education and Development (NEED) program. The program addresses three concerns of Naga City: (i) the devolution of the Department of Social Welfare and Development functions to local governments according to the Local Government Code; (ii) the increasing demands for better day care services by local people, which were triggered by the emergence of costly and mostly inaccessible privately owned preschool centers; and (iii) the evident need for high-quality services for the often-neglected sector of people with disabilities.

The NEED program has several innovative features. First, it centers on effective collaboration between program initiators and partners. Second, it has enhanced the capabilities of local programs to improve access to quality education, increase parental participation in early education, and bolster the Government's Moral Recovery Program by targeting the very young. Third, its focus on people with disabilities raises awareness of the plight of this neglected sector of society and has provided a means for mainstreaming children with disabilities. Finally, the program can easily be replicated by local government units in other areas.

The NEED program has the following components: (i) Survey for Early Detection of Developmental and Congenital Anomalies, (ii) Montessori System, (iii) School for Early Education and Development (SEED), (iv) HELP Learning Centers, and (v) Special Education Program (SPED). The program identifies the specific needs of children with and without disabilities. Children with special needs are placed in programs at either the SPED Center or HELP Learning Centers, while children without disabilities are placed in the SEED or the Montessori System. The NEED approach "programs" the child for admission into the formal elementary system. Today, NEED caters to the 27 districts of Naga with 60 community Montessori-type day care centers. Program activities are carried out by 72 staff, including 55 part-time volunteers, and serve children aged 3–5 years regardless of their socioeconomic status or mental and physical condition.

Program costs are shared by the local government, which provides a monthly honorarium to each teacher, the *barangay* (local) council, which supplements this honorarium and provides center facilities, and parents, who donate a voluntary amount monthly (DAP 1997).

foundation for national education and for economic growth. As a result, it is frequently given highest priority by major international aid agencies.

High-quality basic education acts as the basis for further academic or vocational education, contributes basic competencies to the labor force, and improves the ability to learn, thus contributing to productivity in the household and in labor market or entrepreneurial employment. As Heyneman (1997) notes: “International experience suggests that vocational and technical education and training is most effective when it follows a sound general education and is job related. A strong background in primary and secondary education also provides individuals with a bigger chance of obtaining and profiting by in-service training”.

Prior to policy decisions, however, the question of what is meant by basic education and the relevance of the form in which it is delivered must be addressed. If “basic” implies the fundamental knowledge and skills required in a changing society and economy, then as technological change and the means of production become more sophisticated, people need different and more “advanced” skills. Likewise, to participate fully in a changing civil society, better communication and analytical skills are also needed. Further, basic education, whether at the primary or secondary level, typically teaches numeracy and literacy abstracted from their use (Box 3.12). The implication is that there is room for experimentation with alternative approaches to delivery of basic skills and understandings.

3. Junior Secondary Education

Junior secondary education has already been nearly universalized in several DMCs and is projected to be mainstreamed into other national education systems in several more within 15 years. Extending compulsory or universal education to (most frequently) nine years is a landmark decision in the development of education systems. It suggests an education commitment equivalent to that of many industrialized societies. However, among DMCs, extending the minimum expected years of child schooling has not necessarily altered the curriculum or instructional patterns of either primary or junior secondary schools. The major challenges to planners and policymakers are to integrate junior secondary education as a contiguous stage within basic education; maintain its integration with upper levels of education; and provide

options for the range of needs of a diverse student population. In addition, the content of basic education must also be responsive to the context of local economic opportunities, to allow graduates to productively contribute to society. This latter challenge has clearly been complicated by industrialization, modernization and expansion of the services sector, and processes such as globalization. Given the cost implications for expanding secondary education (including the effects on other education levels competing for financial resources), it is critical that skills learned in junior secondary institutions are matched with productive opportunities upon students' eventual entry into the workforce.

Though perhaps less immediately obvious than in the case of industry and services sectors, meeting the needs of modern agricultural production is also a key challenge for schools in much of Asia.

Box 3.12: Schooling and Work

For many decades, indeed centuries, nation-states have been relying on schools to teach literacy and numeracy skills as well as citizenship skills. Increasingly, for out-of-school training as well, the emphasis on formal education has replaced practical experience as the most recognized learning situation. The shift toward schooling has led to a sharp division between analytical and academic methodology, on the one hand, and "hands-on" application, on the other, as well as between the culture of the school and the culture of the workplace.

It is often argued that efforts to improve education should give the highest priority to basic education, since all young people deserve access to literacy and numeracy skills, to allow them to pursue further education or to function productively in the workforce. Yet the separation of the "theory" of such basic education and practice from application in the real world raises questions both about meaningfulness of instruction and, at a more basic level, the appropriateness of conventional schools for inculcating learning.

Can the learning of basic skills be integrated with learning about the tools, systems, rules and procedures, and social interactions found in nonspecific work settings? Can schools, even "vocational schools", duplicate the work setting for which the student is being prepared?

If the workplace is most effective for situated learning of work-related knowledge and work-related skills, and academic schooling is most effective for the learning of more general, symbolic, and cultural knowledge, what is the role of vocational schools?

Education must provide a base of knowledge and skills to accommodate agricultural modernization, as indicated in Table 3.9. Arguably, the efficacy of individual DMCs' education systems in meeting these learning requirements has been a key determinant in their relative levels of success (or stagnancy) in harnessing improvements in technology and planning to raise agricultural productivity.

Table 3.9: Four Basic Stages of Agricultural Productivity and Their Learning Requirements

| Agricultural Levels | Farmer Entrepreneurs' Technology Level | Agricultural Inputs | Minimum Learning Requirements |
|----------------------------|---|--|---|
| Level A | Traditional farming techniques passed from parent to child. | Local varieties of seeds and implements. | Addition and subtraction not necessarily acquired through formal education. |
| Level B | Intermediate technology. | Small quantities of fertilizer. | Addition, subtraction, division, and rudimentary literacy. |
| Level C | Fully improved technology. | High-yielding varieties: proven seeds, rate of application of seed, fertilizer, and pest control per acre. | Multiplication, long division, and other more complex mathematical procedures; reading and writing abilities; rudimentary knowledge of chemistry and biology. |
| Level D | Full irrigation-based farming. | All above inputs: tubewell access during the off-season, and water rates per acre. | Mathematics, independent written communication, high reading comprehension, ability to research unfamiliar words and concepts; elementary chemistry, biology, physics; regular access to information from print and electronic sources. |

Source: Heyneman 1997.

4. Senior Secondary Education

Given the substantially higher costs of senior secondary schooling in many DMCs, the demand for education at this level depends on parents' financial constraints, as well as labor market conditions and other objectives that parents and students have for this level of schooling. Rapidly expanding enrollments often outstrip the number of new jobs created; certain types of industry seek young unskilled workers; and the

substantial cost of senior secondary schools simply prices this level of education out of the reach of many poor people. The major issue at the senior secondary level relates to the appropriate curriculum mix between general and specific skills. At this level, education becomes increasingly specialized, and in many DMCs there has been a continuing debate over the appropriate extent of its vocationalization.

An academic curriculum is the least expensive approach, and in many DMCs it appears to offer equal or better employment opportunities than existing vocational tracks. As an alternative to skills-oriented programs, a new curriculum innovation, called technology education, is being experimented with internationally and is the subject of discussion in East Asia. Technology education is a synthetic course or program that seeks to develop understanding of applied science and mathematics in the context of technological change. This approach is cheaper and requires less equipment than pure vocational programs.

Faced with the increasing output of junior secondary education and an emerging large demand for senior secondary education, DMCs are beginning to look for alternative avenues for postbasic education. Looking to the short-term future, one strand of senior secondary education undoubtedly will remain focused on academic preparation for higher education. In addition to an academic program, experimentation may be expected with a wide variety of vocational schooling and training arrangements that allow transferability and easy entrance and exit. The general assumption among researchers and policymakers appears to be that academic schooling is more effective for learning more general, conceptual, and society-based knowledge, and that the workplace is more effective for work-related knowledge (cognitive models of tasks and devices) and work-related skills (procedural and interpersonal).

5. Technical-Vocational Education

In response to trends toward industrialization and use of technology, DMCs frequently invest in vocational and technical schools. Haq points out that a major difference between education policies in South Asia and in East Asia was the latter's relative and early emphasis on technical secondary education (Haq 1997). Advocates of vocational and technical secondary education can be found in many DMCs. The differing views of World Bank experts and Indonesian policymakers

about the appropriate model of secondary education are captured in Box 3.13.

A variety of studies indicate that publicly-provided technical-vocational education (TVE) systems generally have had a weak record in meeting employer demands. High unit costs, shortages in available skilled staff, and lack of flexibility in adapting to changing technologies have made technical-vocational education an unattractive investment option. Although many public TVE schools persist in DMCs as the only option other than academic schooling, a trend is apparent toward further diversification at the secondary level. The direction includes a diversified curriculum that combines academic and vocational

Box 3.13: Balance between General and Technical-Vocational Education

Many policy advocates have favored investment in technical-vocational education more than general education, particularly in contexts of unemployment and perceived irrelevance of academic education. Indonesia is one country in which technical-vocational schools have been emphasized. The sixth five-year plan (1993–1998) called for 7.4 percent annual growth of technical-vocational senior secondary places, compared with only 5.1 percent annual growth for general senior secondary places. (Indonesia uses five-year planning cycles within 25-year perspective plans.)

A 1997 World Bank report (1997b) on Indonesia questioned the wisdom of this policy. It noted that technical-vocational schools were about 40 percent more costly than general schools, that general schools were more popular among students and parents, and that the labor market outcomes for graduates of technical-vocational schools were typically no better than for their generalist competitors. The report added that because technical-vocational programs depend on bureaucratically determined factors, institutions cannot easily expand operations when there is more demand, and have no incentive to shrink operations when there is less demand.

The World Bank (1997b, p. 78) recommended that the Indonesian authorities reconsider the budgetary priority given to technical-vocational schools, find ways to reduce costs in the sector, and increase the general-education content in the technical-vocational education streams. More specialized training, it was suggested, could be left to polytechnics and job-specific training in firms. These findings and recommendations match those made by education economists in many other countries (Bray 1998, p. 13).

education; technology education that focuses on the principles of science and technology underlying technology; collaborative programs between schools and enterprises; private TVE institutions, often associated with business and industry; and a variety of specialized training programs sponsored entirely by enterprises.

6. Tertiary Education

In many DMCs, the next decade will likely bring expansion of tertiary education enrollments, improved equity in student access, increased privatization, increased differentiation within tertiary education systems, and more attention to the quality of instruction and research. The direction of policies in tertiary education is toward the development of more competitive and productive institutions supported by one or more public or private sources, with increasing autonomy in determining the composition of the student body and curriculum. This direction of policy does not necessarily eliminate the need for an appropriate government regulatory framework, accreditation requirements, or public subsidies.

To attain increased flexibility and efficiency in meeting the social demands and education needs of the economy, policymakers in tertiary education will seek to (i) make more efficient use of public funds; (ii) increasingly rely on students' families for financing a high proportion of costs; (iii) increase school fees in all public institutions; (iv) link public support to measures of productivity; and (v) encourage direct profit-making activities by universities and higher technical institutions, often in collaboration with private industry. Considering these funding adjustments, a basic equity question will need to be addressed: Does shifting the financial burden to students, as implied by cost sharing, in fact decrease income-related equity in the delivery of higher education and contribute to increasing the education gap between rich and poor citizens?

Implementation of major changes toward institutional autonomy, self-governance, and market orientation will be difficult for several reasons. First, faculty and staff of public education institutions are traditionally accorded the same status, job security, and benefits as civil servants. In addition, efforts toward the institution of nongovernment management boards or more substantial privatization may face resistance within government since they would decrease the role of the state in enrollment and curriculum matters. Finally, socialist and former

socialist states face a particularly difficult set of tasks associated with reorienting tertiary education away from a model based on specialized (often monodisciplinary) universities toward a more balanced and flexible system.