



United Nations  
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Secondary Teacher  
Policy Research in Asia

Secondary Teachers  
in Lao PDR:  
Priorities and Prospects



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# Secondary Teacher Policy Research in Asia

## Secondary Teachers in Lao PDR: Priorities and Prospects

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# Foreword

With the gradual attainment of universal primary education, governments are shifting their attention to secondary education. Responding to the increasing demand for secondary education presents serious challenges and major opportunities in the quest for Education For All (EFA), and countries are striving to find policy responses to address these emerging issues.

It is clear that teachers play a fundamental role in addressing challenges faced by secondary education. Ensuring the presence of competent secondary teachers in urban and rural areas is a major concern in both quantitative and qualitative terms. Existing studies on teacher-related issues and analyses of teacher policy in developing countries tend to focus on primary education, probably due to the special emphasis given to primary education in the EFA process. In order to fill the gaps and respond to the increasing demand for quality secondary education, the Education Policy and Reform (EPR) unit of the UNESCO Asia and Pacific Regional Bureau for Education (UNESCO Bangkok) coordinated a regional research study on secondary teacher policy and management in 2007 and 2008.

This series includes a regional synthesis paper on comparative assessment of issues and policies affecting secondary teachers in East and South-East Asia, and five case studies: Lao People's Democratic Republic, Malaysia, People's Republic of China, Republic of Korea, and Thailand. Three major areas related to secondary teachers are discussed in the case studies: quantitative analysis of demand and supply of secondary teachers, quality of secondary teachers, and compensation. Each study is presented as a summary of the original study, and gives an overview of the status and issues of the country's secondary education system. Researchers and officials from several universities and education ministries collaborated in the preparation of the study. UNESCO Bangkok would like to sincerely thank all those individuals and institutions who provided their expertise and professional experience to this research.

The findings presented in the series are intended to help governments gain insight into policy for secondary teachers across a diverse range of countries, and draw lessons for possible policy responses to challenges and problems in the expansion of secondary education.



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# List of Abbreviations

ADB	Asian Development Bank
EFA	Education for All
GDP	Gross Domestic Product
GER	Gross Enrolment Rate
Lao PDR	Lao People's Democratic Republic
MOE	Ministry of Education
NER	Net Enrolment Rate
ODA	Official Development Assistance
SWAp	Sector-wide Approach
TTC	Teacher Training College
TVET	Technical and Vocational Education and Training
UIS	UNESCO Institute for Statistics
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
WB	World Bank
USD	United States Dollar
<i>Kip</i>	<i>Currency of Lao PDR</i>

# Summary

1. Since 2000, Lao PDR has made a steady recovery from the economic turmoil of the late 1990s. Following the collapse of the public budget, public expenditure on education has now recovered to around 12 percent of total public spending. This is still low by regional standards, but there are good prospects for sustained improvement as government revenues increase from the Nam Theun 2 Hydroelectric Project (see page 1).
2. The recovery since 2000 has been accompanied by rapid policy development. The focus of donor assistance on basic education has been consistent with education policy in Lao PDR. There are, however, emerging signs of a disjuncture between those policy objectives and the actual pattern of educational development. The post-basic sectors are growing quickly, but the rate of enrolment in primary and lower secondary has slackened. Some of this results from the declining birth rate in urban and non-poor areas, but the more serious aspect is that the 16 percent of children not yet in primary school come disproportionately from among low-income households, ethnic minority groups and rural areas.
3. Lao PDR now finds itself in the policy dilemma observed in other developing countries of Asia and Africa. Driven by rising aspirations and private demand from the majority who have already completed primary schooling, the education system is under pressure for secondary and post-secondary expansion before universal primary enrolment has been achieved.
4. Teaching and learning in Lao secondary schools take place under very difficult conditions. The rapid growth of secondary enrolments has not been accompanied by a parallel expansion of the number of secondary schools or classrooms. More students are being added to existing classes. The average class size is currently 50 compared to 37 for lower and upper secondary ten years ago. Textbooks and teachers' guides remain in very short supply. Nor can effective teaching and learning take place in a secondary school without a science laboratory, furniture, equipment, or a reasonable library. All these things are in desperately short supply in secondary schools outside the major towns.
5. Disparities between rural-urban and poor-non-poor districts can be dramatic. The poor and poorest districts fare much worse than the non-poor, both in their access to secondary schooling and in the condition of their schools. Both males and females in rural locations display enrolment rates far lower than their urban compatriots, and minority rural females are particularly disadvantaged, with lower secondary enrolment rates.

6. An alleged shortage of secondary teachers has been prominent in policies and donor agendas of recent years, but from the purely quantitative point of view there is no persuasive evidence of a severe shortage on national average. The current student-teacher ratio of 25:1 is appropriate for a class size of some 44 students. With a current average class size of about 50 students, the critical constraint in reducing class size is not the lack of teachers: it is the lack of classrooms. On the simple example of a target reduction in class size from 50 to 44, an additional 1,000 classrooms would have to be provided, a very substantial undertaking.
7. Individual schools may face special problems of teacher shortage that are not captured in these illustrative examples. There is substantial provincial variation in both the teacher ratios and class size, and there is much anecdotal comment that secondary schools are experiencing severe shortages in particular specialized subjects, with teachers of mathematics and natural science being most commonly mentioned.
8. While the overall *quantitative* story of secondary teacher numbers in Lao PDR is relatively benign, the situation of teachers' qualifications and training is the opposite. Teacher qualifications in Lao PDR are measured by two criteria: the number of years of formal schooling, and the number of years of teacher education. The formal requirement for teaching in secondary school is currently a minimum of 11 years of formal school and 3 years of teacher education (11+3). Almost half of all secondary teachers do not meet this formal minimum qualification. More than one-third of teachers in 2005/06 had an 8+3 qualification or less – meaning that they had no more basic schooling than the level of the students they were teaching.
9. There are signs of recent improvement on national average, but the aggregate national calculations conceal a greater problem with the distribution of teachers. Some provinces are particularly disadvantaged, with two-thirds or more of their secondary teachers not meeting the formal minimum requirement. Some provinces, such as Oudomxay and Saravane, are in a worse position than five years ago, and Phongsaly and Houaphanh have improved at a lower rate than the national average.
10. A complex change in the supply of, and demand for, teachers in Lao PDR has been underway since the financial crisis of ten years ago. Until recent years, becoming a teacher in Lao PDR was synonymous with being hired as a “quota teacher”, which is to say being employed as a permanent civil servant. The quota system is breaking down. On the supply side, the regulation that quota teachers on scholarships should return to their home province is no longer enforced, nor are newly-qualified teachers required to repay their scholarship if they do not enter teaching. On the demand side, the financial turmoil of 1997/98 caused provincial governments to reduce drastically the number of quota teachers whose scholarships could be funded and who could be subsequently hired, and teacher training enrolments fell substantially. The quota system has never fully recovered.

11. The outcome of these changing supply and demand conditions is that teachers flow to where demand is greatest and conditions most congenial. As secondary enrolments have grown rapidly in recent years, there has been no barrier to primary-trained teachers finding jobs in the secondary system, despite the fact that their 8+3 or 11+1 qualifications are not intended for secondary teaching. On national average the increase in the number of secondary teachers has been satisfactory, but a high percentage of the secondary workforce is under-qualified. There is, in short, no great problem with teacher numbers in secondary school, but there is a severe problem of teacher quality.
12. Projections of the future supply of, and demand for, secondary teachers were made using the methodology initially developed as part of the *Education for All (EFA) Action Plan 2003-2015*. The most striking finding from the projections is that over the period to 2015 the annual supply of new teachers entering the profession will exceed the projected annual requirements. While it was not formally possible to estimate the detailed annual supply of teachers with specific upper secondary qualifications, the projected supply of new 11+3 teachers is not only sufficient for lower secondary school: in most years it is also adequate to cover requirements for all secondary education including upper secondary.
13. While there is considerable uncertainty about these projections, the major implication is that the pool of potential secondary teachers is quite large. The problem is not insufficient student enrolments in 11+3 programmes but encouraging sufficient numbers of teacher graduates to actually enter the profession.
14. For many years teachers' salaries in Lao PDR were considered very low. Salaries of teachers are based on the established civil service salary scale. The grade is dependent largely on the employment position, which in turn is determined mainly by the initial level of qualification. In addition to the base scale there is a wide variety of supplements. The supplements have become a quantitatively important part of the civil service "salary package". In individual cases the supplements can amount to as much as 40 percent of take-home pay, but on average supplements make up 20 to 25 percent of gross pay for teachers. Recent data suggest that teachers are only now recovering their relative position of ten years ago. Lower secondary salaries are around 120 percent of gross domestic product (GDP) per head and upper secondary salaries are around 130 percent.
15. Although average salaries have improved, the financial career path is still poor. The typical secondary teacher is on a salary scale that, over a 30-year working lifetime, will increase by only 1.3 percent a year. All teachers have benefited from the pay rises of recent years, but the difference between the average salary for upper secondary and primary is very tight. On average, an upper secondary teacher earns no more than 13 percent that of an average primary teacher. This is not much return on the earnings foregone from the longer period of pre-service training.

16. The Government of Lao PDR is committed to improving the quality of its teachers, including secondary teachers, through longer periods of pre-service training. The critical question is whether the existing teacher colleges can respond effectively to the increasing demands that will be placed on them.
17. The foremost concern is the unit cost of teacher education. Costs in the teacher colleges must be interpreted very cautiously, but the limited evidence suggests that teacher education in Lao PDR is very expensive. Lao PDR undertook a major rationalization of teacher colleges in the late 1990s, but the cost structure of teacher education needs further attention. Its unit costs exceed those of any other sub-sector of education. The underlying economics and supply-response of the country's teacher colleges have so far been disguised under the active programmes of constant teacher upgrade, but it is becoming increasingly apparent that imposing longer periods of teacher education on the existing inefficient and costly structure is an ineffective use of resources. Given the objectives of secondary expansion, and the requirements for better-qualified teachers, it is timely to reconsider whether the existing and anticipated teachers' programmes are appropriate for the task.

## Section 1

# The Economic and Policy Context

## 1.1 Collapse and Recovery

As recently as ten years ago, the prospects for Lao PDR could only be described as unpromising. The collapse of the Soviet Union had seen it lose two-thirds of its annual aid inflows; its bid to make the transition from a centrally-planned to a market-oriented economy through the *New Economic Mechanism* (NEM) in 1986 made little initial impact; and by the late 1990s Lao PDR was facing a major economic crisis. Economic growth had been faltering from the mid-1990s, and the Asian financial crisis of 1997 turned slowdown into disaster for public expenditure. Economic growth became negative (-1.4 percent) in 1998/99. The social sectors were not quarantined from the economic decline and the impact on education spending from the economic and financial developments can without exaggeration be described as traumatic. The education budget declined to only 7.2 percent of the public budget, a figure lower than that for any other Asian country (UIS, 2003).

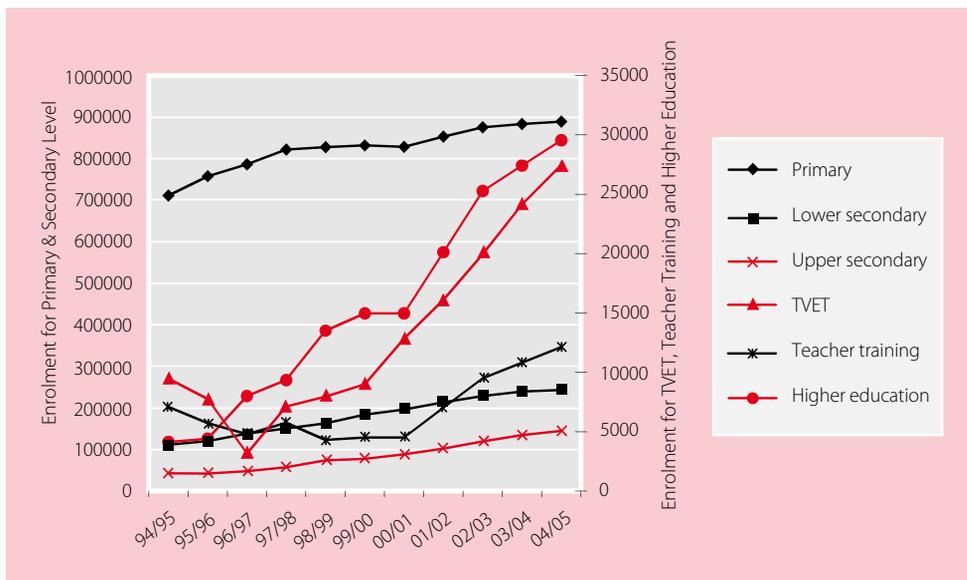
Prospects today are much brighter. The process of economic transformation is more secure, with increased foreign direct investment in the hydropower and mining sectors, and better private sector performance in garments and tourism. The *National Growth and Poverty Eradication Strategy* (NGPES) has set ambitious targets for broader development efforts, and these will be underpinned by revenue flows from the Nam Theun 2 (NT2) Hydroelectric Project.<sup>1</sup> The education sector has bounced back with strong progress (Figure 1).

The turmoil in enrolments during the latter half of the 1990s and the subsequent recovery are captured in Figure 1. Lower and upper secondary education experienced a flattening of enrolment growth, and enrolments in teacher training and TVET fell substantially. Only primary and higher education enrolments continued to grow. By 2000 the economy appeared

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<sup>1</sup> Nam Theun 2 Hydroelectric (NT2) is a dam on the Nam Theun River, a tributary of the Mekong, which will allow Lao PDR to export electricity to Thailand while also producing 75 megawatts of electricity for domestic use. An idea of its importance to Lao PDR is that it will generate annual government revenues of USD\$30 million on average in the first ten years, rising to USD\$110 million between 2020 and 2034. This income represents a significant boost to government revenues, which amounted to just USD\$400 million in 2005.

Figure 1: Growth in Enrolments, 1994/95-2004/05



Note: Primary, lower secondary and upper secondary are measured by the left-hand vertical axis; technical and vocational education and training (TVET), teacher training and higher education are measured by the secondary axis on the right-hand side.

Source: World Bank (WB) (2007, Figure 16).

to be back on track, with renewed economic growth and stability in both inflation and the Kip exchange rate. Public spending on education steadily improved to 14 percent of the government budget in 2005/06.

Lao PDR continues to make progress with primary and secondary enrolments. A decline in the primary gross enrolment rate (GER) signals some improvement in efficiency and perhaps a lower incidence of over-reporting of enrolments rather than any substantive reduction in school participation. Primary net enrolment rates (NERs) make it clear that primary enrolment has in fact improved significantly over the past ten years, with NER reaching 86 percent for males and 81 percent for females in 2006.<sup>2</sup> Table 1 shows the development of enrolments in secondary education.

<sup>2</sup> These net enrolment rates are calculated by UNESCO Institute for Statistics (2008, Table 3) on the basis of official data from the Ministry of Education. Data for 2002-03 from the LECS3 household survey show enrolment rates some five to ten percentage points lower than MOE estimates (King and van de Walle, 2005). Enrolment rates derived from a detailed household survey may better reflect the reality of continuing school attendance than MOE's school census, which is based on initial enrolments at the start of the academic year. Regardless of the source, there is a trend of improving enrolments in recent years.

**Table 1: Gross Enrolment Ratios at the Secondary Education Level (%)**

	Lower Secondary			Upper Secondary		
	Males	Females	Total	Males	Females	Total
2002/03	55.2%	40.5%	47.8%	31.7%	21.1%	26.3%
2003/04	56.9%	43.6%	50.3%	34.1%	23.4%	28.7%
2004/05	57.1%	44.7%	50.9%	36.8%	25.5%	31.1%
2005/06	62.5%	49.6%	56.2%	42.6%	30.6%	36.7%

Source: UIS, (2008, Table 4); ADB (2005, Tables A29, A30).

The gender gap in primary enrolments is now four percent compared to the seven percent a decade ago. The gender gap is closing more slowly in secondary education, but female enrolments are still increasing at a faster rate than male enrolments. These improvements for women are confirmed by data from the 2003 household poverty survey (*Lao Expenditure Consumption Survey 3*, usually known as LECS3): while rural women from ethnic minority groups have made the slowest gains in educational attainment, the biggest improvement has been recorded by women from the majority Lao-Thai group. Today, there is no difference in literacy between young men and women from the majority group living in urban areas.

## 1.2 Education Policy

The funding and enrolment recovery since 2000 has been accompanied by rapid policy development. The *Education Strategic Vision* prepared in 2000 established the broad targets to be achieved by 2020 and the *Five Year Education Development Plan 2001-05* provided detailed annual targets for the first phase of the 20-year strategy. A draft of the *Education Sector Development Framework* was prepared in 2008. The *National Education System Reform Strategy* has set ambitious targets to speed up the introduction of a 5+4+3 cycle to add an extra year to lower secondary schooling.<sup>3</sup> A new curriculum for lower secondary has been in development since 2007. The *Education for All (EFA) Action Plan 2003-2015* is much more than a broad statement of non-contentious objectives: there was a clear acknowledgement that EFA would only be achieved if rapid enrolment growth at the upper levels of the system was carefully managed.

A further key strand of policy is that education is one of the four “pillars” or priorities of the *National Growth and Poverty Eradication Strategy* (NGPES). The 142 districts of Lao PDR have been divided into 70 non-poor, 25 poor and 47 poorest districts, using a range of income, physical infrastructural, and educational characteristics. Given the abundant international evidence of the relation between education and poverty, NGPES is a sensible policy of

<sup>3</sup> This study was conducted mainly in 2007 and finalized in 2008. The data are based on the 11-year general education system (5+3+3) and do not take into account the new 12-year general education system (5+4+3) introduced in 2009/10.

poverty-focused educational development. The 47 poorest districts receive most attention, not least from donors who were instrumental in assisting the development of the policy. The *Teacher Education Strategy 2006-2015* and the *Teacher Education Action Plan 2006-2010* (jointly known as TESAP) were approved by government in early 2006. The TESAP outlines overall teacher targets and objectives to support the National EFA Action Plan, with particular emphasis on policy analysis for improved management of the teacher education system to ensure that teacher numbers match the growth in school enrolments.

Donors have been actively involved in policy development, and the overall focus of donor assistance on basic education has been consistent with the Government of Lao PDR's education policy. The focus on equitable access to quality basic education (primary and lower secondary) is broadly appropriate to Lao PDR's position as a low-income country that is still some way from the achievement of EFA. Virtually all major external assistance has been supportive of this policy through strengthening different aspects of basic education.<sup>4</sup>

There are, however, emerging signs of a disjuncture between those policy objectives and the actual pattern of educational development. Recent policy development has been excellent in creating the right policy framework and highlighting the constraints. Donor assistance has been appropriately targeted in support of that policy framework. However, the pattern of recent enrolment growth, with its faster rates of development in the post-basic sub-sectors, is following a different trajectory. It is clear from the pattern of enrolment recovery shown in Figure 1 that the rate of increase in primary enrolments has now slackened: the annual increase of enrolments, which was around 25,000 pupils in 2001/02, reached only 6,000 in 2004/05 despite the fact that some 16 percent of the age group is not enrolled in primary schools. Similarly, the rate of growth of lower secondary enrolments has also slowed.

Some of this slowdown is the result of simple demographics. The census of 2005 showed that the birth rate in urban and non-poor areas was declining, and the size of the school-entry six-year old cohort could shrink by 22 percent by 2009/10 (MOE, 2006a). The more serious aspect of the primary slowdown is that the children not yet in primary school come disproportionately from low-income households, ethnic minority groups and rural areas. The NERs range from over 80 percent for non-poor children (both boys and girls) in urban areas to

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<sup>4</sup> Among the major donor programmes in education in 2005 were: Asian Development Bank (ADB), *Second Education Quality Improvement Project (EQIPII)* to improve the relevance, quality and efficiency of primary and secondary education; AusAID (Australia), *Basic Education for Girls Project*, to bring women into the mainstream of development through improved levels of education; European Union, *Basic Education for Northern Communities*, for school and classroom construction; Swedish International Development Assistance (SIDA), *Teacher Training Enhancement and Status of Teachers (TTEST)*, to contribute to poverty reduction by assisting in achieving quality education for all children; and WB, *Second Education Development Project*, to increase primary school enrolment and completion in the 19 poorest districts of the six poorest provinces. In addition, France was supporting basic education as well as providing support for bilingual classes and preparation of French higher education, and Japan was supporting higher education by strengthening faculties of the National University of Lao PDR and providing scholarships to study in Japan.

45 to 55 percent for ethnic minority groups in rural areas, with ethnic minority girls from poor rural families being particularly disadvantaged.<sup>5</sup>

The second feature is that ensuring educational provision for these disadvantaged populations is not a simple question of extending existing policies and extrapolating existing costs. Remote and mountainous districts with scattered and sometimes shifting populations require small schools, teachers skilled in multigrade classes and teaching adapted to children who often come to school speaking a language other than Lao. The marginal cost of educating these disadvantaged children will be higher than the national average. While there is no doubt in the integrity of the Government of Lao PDR seeking to achieve EFA, the percentage of the recurrent budget allocated to school education is declining. Table 2 suggests that, even with due regard for annual fluctuations, the recent rapid increase in upper secondary and higher education enrolments is being underpinned by an increased flow of public money.<sup>6</sup>

**Table 2: Recurrent Expenditure by Sub-Sector**  
(% of Total Recurrent Spending in Education)

	1994/95	1999/00	2000/01	2002/03	2004/05	2006/07
Early Child Care & Education	3.3%	3.6%	3.1%	2.4%	2.5%	3.1%
Primary Education	46.0%	48.7%	44.0%	41.9%	42.8%	42.9%
Lower Secondary Education	16.9%	16.7%	16.6%	14.9%	12.7%	12.7%
Upper Secondary Education	7.1%	8.3%	10.8%	13.4%	15.7%	14.3%
Technical & Vocational Education	6.5%	2.6%	4.4%	6.0%	3.2%	3.3%
Teacher Training	4.8%	2.7%	4.9%	7.2%	4.2%	3.8%
Higher Education	8.4%	6.8%	6.8%	6.5%	10.9%	11.6%
Non-Formal Education	n.a.	n.a.	0.9%	1.5%	0.4%	0.4%
Administration & Management	7.2%	11.1%	8.5%	6.3%	7.7%	8.0%

Source: MOE (2008, Table 14).

<sup>5</sup> Lao PDR has an inclusive approach to citizenship, and the legal rights of ethnic minorities are recognised in the constitution. The problem is that terminology is not standardised. Detailed household or poverty surveys generally attempt a precise description of ethnic group, but MOE data usually refer to the categories of *Laoloom*, *Laooong* and *Laotheung*. Strictly speaking, these are not ethnic or linguistic groups but are terms referring to low- or highland population categories and as such provide only a very rough-and-ready proxy for ethno-linguistic differences.

<sup>6</sup> Discrepancies between the provincial data collected by the Department of Finance, the MOE and the Official Gazette prepared by the Ministry of Finance suggest that the breakdown of the recurrent budget between sub-sectors of education has to be treated with some caution. Table 2 uses data from the MOE estimates. These data are likely to be an adequate guide to broad trends.

This implicit acceptance of upper secondary and post-secondary expansion has recently received more direct policy endorsement. The teacher education projections in the *Teacher Education Strategy* (MOE, 2006b) are predicated upon transition rates of 85 percent from primary to lower secondary and from lower to upper secondary by 2010/11. These targets may be unrealistic: most urban children who want to attend secondary school can already do so and the donor emphasis on capacity expansion at primary level limits the supply of secondary opportunities in the poorest districts. The result is that on national average transition to lower secondary has been stable during the last five years and the transition rate to upper secondary has even fallen back slightly. Nonetheless, the number of lower and upper secondary enrolments has increased by 24 percent and 64 percent respectively during the last five years.

However understandable these practical and policy shifts of emphasis, Lao PDR now finds itself in the policy dilemma observed in other developing countries of Asia and Africa. By comparison with the sequential pattern in the “Asian tiger” economies of Singapore, Taiwan (China), Hong Kong, and Republic of Korea during the 1960s and 1970s, the process of secondary development in Lao PDR is being telescoped into a much shorter period. Driven by rising aspirations and private demand from the majority who have already completed primary schooling (and who will provide the technically skilled people necessary for Lao PDR’s socio-economic development), the education system is under pressure for secondary and post-secondary expansion before universal primary enrolment has been completed.

The *EFA Action Plan 2003-15* brings out clearly the fact that EFA in Lao PDR is not financially achievable without tight control of transition rates at the upper levels of the system. Public funds need to be made available to overcome remaining disadvantages in basic education. At the same time, rising aspirations and social demand for secondary and post-secondary education need to be incorporated much more explicitly into the planning and financing of education if a balanced sector-wide approach is to be achieved. It hardly needs to be added that secondary education is right at the heart of this policy dilemma.

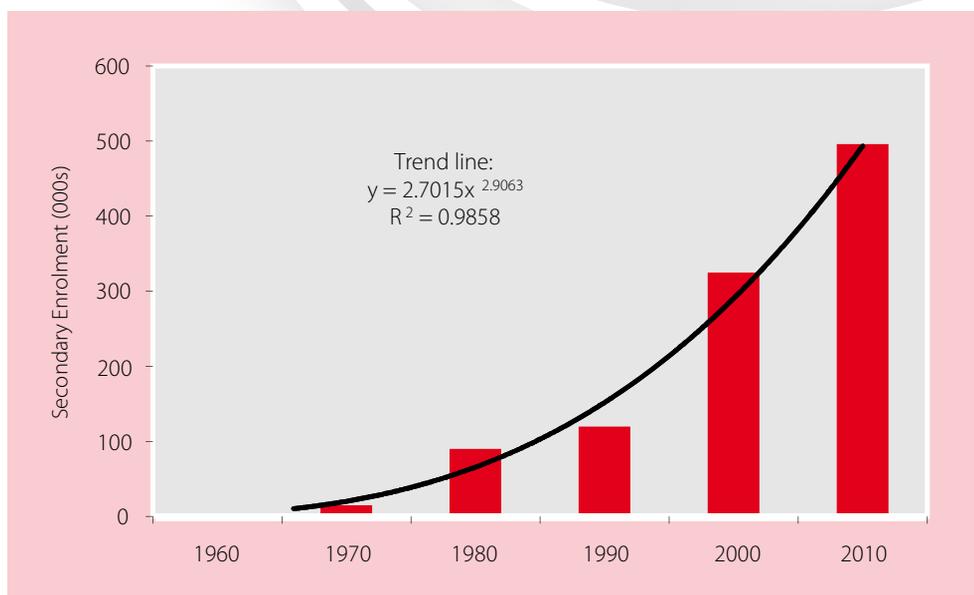
## Section 2

# Secondary Education in Lao PDR: A Closer Look

### 2.1 The Overall Picture: Students, Schools, and Classes

In 1960 Lao PDR had 3,000 students enrolled in secondary school with a secondary GER of one percent (ADB, 1994). As a deeply religious traditional subsistence economy still under French colonial rule and yet to face the trauma of war during the 1970s, it was customary for young men and boys to receive some schooling in a temple. Secondary education as a formal system of provision existed on only the smallest scale. As in other colonial societies of the time, secondary school was largely limited to a fortunate few “scholarship boys” who would progress through a highly selective system to become school teachers or to gain prestigious jobs in the colonial (and subsequently post-colonial) administration. Figure 2 shows the pattern of growth since those early days.

Figure 2: Actual and Projected Trend of Secondary Enrolments



Source: ADB (1994); MOE (2004b; 2005b).

Long-term trends always need to be treated cautiously, but it can also be useful to place short-term fluctuations in longer-term context. Figure 2 powerfully portrays the way in which neither the financial turmoil of the late 1990s nor the more recent slow-down in the secondary transition rates has fundamentally altered the consistently strong underlying growth of enrolments. Projected enrolments in 2010 (not merely a statistical extrapolation in the graph but derived separately from student flow rates and discussed later in this study) are broadly consistent with the long-term pattern.

The second step in this story of secondary growth is to note that the rapid enrolment increase in the last five years has not been accompanied by a parallel expansion of the number of secondary schools. The number of secondary schools has increased only slightly. When this arithmetic is put together with the rapid rise in student numbers, the result is that secondary schools have been getting bigger (the column data in Figure 3), although the latest data for 2005/06 suggest some improvement from the previous peak, largely through the conversion of now-unused primary schools.

**Figure 3: Number of Secondary Schools and Average School Size**



Note: The number of schools is represented by the lines on the graph; the columns display average school size in each of the years. Average school size is scaled on the right-hand axis.

Source: Calculated from data in ADB (2005, Appendix Tables A33, A34).

Schools have been getting bigger, but additional classrooms are a small part of the equation. As noted earlier, donors have concentrated on primary education and few secondary classrooms have been built.<sup>7</sup> What has happened instead is that more students are being

<sup>7</sup> The World Bank's *Education Development II* (EDPII) has a classroom-building component.

squeezed into each class. Statistics on class size are not fully reliable.<sup>8</sup> Taking at face value the relationship between students and classes in the *Annual Bulletin*, the enrolment-weighted average secondary class size is currently 48.6, compared to the weighted average of 37 for secondary classes ten years ago (Mingat, 1998). Class size in Grade 11, the all-important final year with its national examination, is greater than the average. With a minimum but plausible adjustment for missing observations, the average size of Grade 11 is of the order of 53 students.

In fact, the numbers in Figure 3 hardly begin to describe the reality of the learning process and conditions in secondary education. In 2002/03, 7,076 secondary classes were held in a total of 7,062 classrooms. In short, the existing stock of classrooms (many of them barely usable because they are so dilapidated) is already being used to capacity. Textbooks and teachers' guides remain in very short supply. The secondary curriculum, now being revised, largely dates from 1994. The poorest districts do not have money to provide textbooks based on that curriculum, and it is possible to find schools still using older books based on the curriculum from the 1970s – or in extreme cases not using books or teachers' guides at all. In recent years the single most commonly reported fact about textbooks and learning materials in Lao schools is that there are very few books available throughout most of the system and there is plausible evidence that the situation is worsening each year despite donor support (ADB, 2005). Nor can effective teaching and learning take place in a secondary school without a science laboratory, furniture, equipment, or a reasonable library. All these things are in desperately short supply in secondary schools outside the major towns.

## 2.2 Disparities and Inequities in Secondary Schooling

No description of secondary schooling in Lao PDR is complete without a review of social and geographic disparities. Provincial disparities can be dramatic. For example, the transition rate from lower to upper secondary ranges from 87.7 percent in the capital city (meaning in practice that everyone who wants to continue to upper secondary school can do so) to only 49 percent in Xiengkhouang province. However, the provinces in Lao PDR are to a large extent administrative constructs, and there is as much variation within provinces as between them. A more informative procedure is to work at district level, and to build upon the fact that (as noted earlier) the *National Growth and Poverty Eradication Strategy* (NGPES) divided the 142 districts of Lao PDR into 70 non-poor, 25 poor and 47 poorest districts, using a range of income, physical infrastructural and educational characteristics.

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<sup>8</sup> The MOE database of secondary schools and students reports many instances of zero classes for any given grade, even where schools report students enrolled in that grade. Data in the *Annual Bulletins* cite the number of classes, but some schools may report the physical number of classrooms, with others reporting the numbers of classes actually taught in those rooms, with higher numbers of taught classes made possible through shift operations. The evidence points to class sizes in secondary school of 50 students or more, and notwithstanding the importance of statistical accuracy, precise numbers are not necessary to conclude that class sizes of 50+ are too large for effective teaching of the interactive, analytical and independent study skills desirable in secondary schools.

Table 3: Poverty and Secondary Education in Lao PDR, 2004/05

	Districts			Lao PDR
	Poorest	Poor	Non-Poor	
<b>Transition to lower secondary</b>				
Males	74.1%	76.1%	83.1%	80.1%
Females	71.7%	67.9%	78.1%	75.5%
<b>Transition to upper secondary</b>				
Males	74.5%	66.0%	80.9%	77.9%
Females	73.1%	62.4%	80.2%	76.9%

Source: ADB (2005, Table 9, 10).

While the correlation between district poverty and secondary education indicators is not perfect, the summary statistics of Table 3 make it clear that the poor and poorest districts are much worse than the non-poor or the Lao national average in their access to secondary schooling. Further disparities arise if we consider the relationship between urban and rural areas and ethnic groups (Table 4). It becomes clear that the disparities in lower secondary enrolments between male-female, urban-rural, Lao-Thai, non-Lao-Thai, and poor-non-poor are substantial.

Table 4 is striking in what it reveals of the substantial differentials between categories. Members of the Lao-Thai majority ethnic group generally have the highest rates of enrolment in lower secondary school, no matter whether male or female, or urban or rural location. By contrast (and with due recognition of small sample numbers), rural low-income minority ethnic groups compare very poorly. Both males and females in rural locations display enrolment rates far lower than their urban compatriots, and minority rural females are particularly disadvantaged, with lower secondary enrolment rates. Specific explanations are likely to be found in a combination of demand issues (cultural factors of early marriage and housekeeping duties in which families do not attach high value to the education of their teenage daughters) and supply (only 3.3 percent of the poor rural ethnic minority population lives in a village with a lower secondary school). It needs to be emphasized that the provision of secondary

schooling is inherently difficult in the remote and mountainous districts inhabited by the minority ethnic groups, but the numbers of Table 4 highlight the problems to be overcome.

**Table 4: Lower Secondary Enrolment Rates (%) by Population Characteristics**

	Urban				Rural			
	Lao-Thai		Total		Lao-Thai		Non-Lao-Thai	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Total</b>								
Net enrolment rate	54.2%	45.4%	51.2%	44.2%	35.0%	31.5%	11.9%	6.5%
<b>Non-poor</b>								
Net enrolment rate	60.0%	48.2%	57.2%	47.4%	39.5%	37.0%	15.5%	10.3%
<b>Poor</b>								
Net enrolment rate	31.2%	32.8%	31.2%	32.8%	21.3%	17.4%	8.7%	2.9%

Note: Non-Lao-Thai groups are omitted from the urban area totals because of low sample numbers  
 Source: King and van de Walle (2007, Table 3).

## Section 3

# Secondary Teachers

### 3.1 Teacher Numbers: The Basic Quantitative Story

If the overall picture of secondary education in Lao PDR is one of rapidly growing enrolments, an infrastructure of schools, classes, curriculum and teaching materials, which by any measure has not kept pace, and substantial social and geographical disparities in both student access and facilities, then the shortage of secondary teachers seems at first sight to contribute yet another element in this dismaying story.

It is difficult to open any Lao government or donor education policy document from recent years without reading about the severe shortage of secondary teachers. The *Education Sector Plan* carried out with donor technical assistance in 1998 seems to have been particularly influential in establishing the idea of a serious teacher shortage at secondary level (ADB, 2000). This was an influential and accessible piece of work, which laid the foundations for a resurgence of policy interest in Lao PDR's educational development after the financial collapse of the late 1990s. The *Education Strategic Vision* was prepared in 2000 (MOE, 2000b) and the *Five Year Education Development Plan 2001-05* (MOE, 2002b) built on the Sector Plan's foundations.

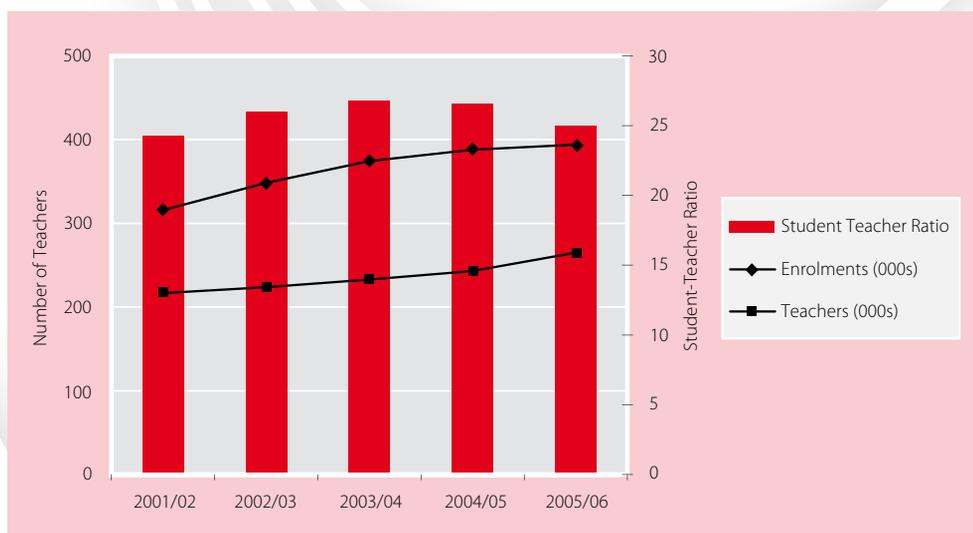
It is not difficult to understand the alarm about teacher shortage at that time. Secondary enrolments were growing rapidly but new entrants into teacher colleges were declining. The financial crisis of 1997 had brought severely reduced recurrent funding to the teachers' colleges. Teacher salaries had declined to the point where, after adjustment for inflation, they were far below the level of the early 1990s. On the international evidence of comparable countries, they fell far short of the level that would be expected from Lao PDR's national income (MOE, 2003b). A consolidation of the teachers' colleges from nearly 60 in 1990 to only 10 by the end of the decade was justifiable in terms of cost and often low quality of instruction. It is likely, however, to have caused fluctuations in the supply of potential trainees as they and their families adjusted their aspirations to sharply different costs, accommodation and travel conditions for study no longer close to home.

Ironically, from a purely quantitative point of view, and looking only at national averages without regard to teacher quality, the evidence for a national shortage of secondary teachers was not strong. Conclusions about shortages still need to be heavily qualified. Figure 4 shows

the growth in secondary enrolments and teachers in recent years, and the widening gap makes it clear that teacher numbers have not kept pace. As a result, the student-teacher ratio has increased from 23:1 five years ago to 25 students per teacher today. This widening in the student-teacher ratio can be given even more dramatic emphasis by taking a longer perspective: ten years ago, Mingat (1998) found a secondary teacher ratio of 16:1.

It is true, as a matter of arithmetic, that applying a ratio of 16:1 to the 2005/06 student enrolment of 393,856 would require 24,616 secondary teachers, rather than the actual number of 15,891. However, it is wrong to infer that there is a shortage of nearly 9,000 secondary teachers today. First, a secondary teacher ratio of 25 is right on the Asian developing country average of 24 to 25 students per teacher (Mingat and Tan, 1998). In other words, secondary student-teacher ratios in Lao PDR fall within the range of international practice. Second, at the overall national level, the practical outcome has not been a shortage of secondary teachers but their more effective use. The student-teacher ratio is less useful in secondary than primary school because subject specialization implies a more complex relationship between class size, teachers per class and hours of instruction. Each class will have several teachers, and each teacher will teach several classes.

**Figure 4: Teacher Numbers and Student-Teacher Ratios in Secondary School**



Note: Teacher numbers and teacher ratios are measured on the right-hand axis.  
 Source: Calculated from data in MOE (2002a; 2003a; 2004a; 2005a; 2006a).

After taking into account this more complex relationship, Mingat (1998) showed that there were actually too many secondary teachers during the early and mid-1990s in relation to the average secondary class size of 37. The notionally “good” teacher ratio of 16:1 implied that too many teachers were employed or that they were under-utilized by working fewer hours than the number notionally required of them.

Ten years on, the critical question is whether the shifting relationships between students, classes and teacher ratios have substantially altered that conclusion. Calculations in the previous section suggested that the current average class size is of the order of 48 to 49 students. With 35 hours of instruction per week and required teacher hours of 20, we would expect to find a ratio of 28 students per teacher.<sup>9</sup> Instead, the actual teacher ratio is 25. In short, on admittedly simplified arithmetic (and using national averages right across the secondary sector) there is no strong quantitative evidence of teacher shortage.

Individual schools may face special problems of shortage not captured in these illustrative examples. There is substantial provincial variation in both the teacher ratios and class size, from a ratio of 21:1 and average class size of 42 in Savannakhet to 33:1 and 55 respectively in Borikhamxay. School leavers who have left the village to receive teacher training in “the bright lights” of a provincial town do not always want to return to work where the need is greatest. There is much anecdotal comment that secondary schools are experiencing severe shortages in certain specialized subjects, with teachers of mathematics and natural science being most commonly mentioned, though this is hardly a problem confined to Lao PDR. Yet a further caveat is teacher absenteeism, with the likelihood that they teach for less than their reported number of instructional hours. They may need time for outside employment to compensate for low salaries (perhaps by teaching in a second school or by growing their own rice and vegetables), or because they simply reduce their effort.<sup>10</sup>

On balance, Lao PDR may now have reached the practical limit of class size and teacher ratios. There is no longer any indication of the substantial under-utilization of secondary teachers identified ten years ago, nor is there persuasive evidence of a severe shortage on national average. However, this still leaves unanswered the question of why secondary classes have nearly 50 students on average, when the number of teachers is sufficient for a class size of 44 students. The alleged shortage of secondary teachers has been prominent in policies and donor agendas of recent years, but the critical constraint in reducing class size is not the lack of teachers: it is the lack of classrooms. The required increase in the number of classes is dramatic. On the simple example of a target reduction in class size from 50 to 44, the number of classes would have to increase from 7,877 to 8,951, a very substantial undertaking (see Box 1 for a perspective on improvements in physical facilities for schools).

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<sup>9</sup> Predicted class size equals  $35/20$  times the student ratio of 25.

<sup>10</sup> Standard economic analysis starts from a relationship between price and quantity. If the price is low, less is supplied. Where the price (salary) is low in an employment market, some employees will indeed reduce their supply by finding better-paid work elsewhere. Many others will instead become “quantity adjusters”, remaining employed in the low-paying job but reducing the amount of work they are prepared to do. If the perceived shortage of teachers arises from the fact that teachers do not teach their full required hours, it is a problem which should be fixed through tighter management of teachers in the short term and improved incentives through paying a market-competitive salary in the longer term. Discussions with senior officials in the Ministry of Education suggest that there is little culture of “management” in Lao secondary schools, with principals unable (and indeed not expected) to enforce rules on teacher attendance and the actual teaching of classes. Survey evidence (WB and MOE, 2008) suggests that there is little accountability to MOE inspectors outside the school, but lower secondary teachers appear to be under frequent oversight from school directors.

### Box 1: Donor Support: From Bricks and Mortar to Capacity Development

It is worth speculating on the reasons why teacher numbers (and teacher quality) have in recent years received such heavy policy emphasis to the relative neglect of physical capacity in secondary schools. One explanation can be found in the fact that the Government of Lao PDR and the donors have appropriately pursued the priority of supporting full national coverage of primary rather than post-primary schooling. An important part of the answer can also be found in the changing nature of donor support. Twenty years ago donor support right around the developing world consisted overwhelmingly of “bricks and mortar” project assistance, in which the building of civil works (schools, classrooms, toilets, and laboratories) figured heavily. Today, much donor activity is human capacity development or training. The newer approach is surely welcome in the general case, but that approach is not free from its own limitations. In Lao PDR, less than 20 percent of education official development assistance (ODA) now consists of “classic” building activity. Donor funds are fungible, recipient governments do not refuse donor support, and the resulting emphasis on human capacity development fully reflects the preoccupations and fashions of donors, even where that focus leads to the relative neglect of critical complementary inputs such as physical infrastructure in schools and classrooms.

## 3.2 Qualifications and Quality of Teachers

If the basic quantitative story of secondary teacher numbers in Lao PDR is an issue, which is almost benign in its conclusions, then the situation with the qualifications and training of teachers is the opposite. It is a story, which appears initially benign, but turns out to have serious consequences for the quality of secondary education.

This initial story is quickly stated. Whereas some 20 to 25 percent of primary teachers have received no teacher training – a percentage that has proved stubbornly resistant to improvement – Table 5 indicates that virtually all secondary teachers are (to use the terminology of the MOE’s *Annual Bulletin*) “formally qualified” (MOE, 2005a, Table 2.15).

Table 5: Formally Unqualified Secondary Teachers

	2000/01	2001/02	2002/03	2005/06
Formally unqualified	206	223	226	142
Total teachers	12,209	12,867	13,421	15,129
Percent unqualified	1.7%	1.7%	1.7%	1.0%

Source: MOE (2001; 2002a; 2003a; 2006a).

This apparently benign finding is misleading. It is true that the vast majority of secondary teachers have teacher training qualifications and are therefore qualified in that sense, but it is also true that many of them have low levels of formal schooling. Teacher qualifications in Lao PDR are measured by two criteria: the number of years of formal schooling and the number of years of teacher education. Thus, an “11+1” has completed secondary school (11 years) and then gone on to complete one year of teacher education. Box 2 summarizes the main pattern of qualifications.

### Box 2: Pre-Service Teacher Education in Lao PDR

There are 12 teacher education institutions in Lao PDR, ten of which are specialist teacher schools and colleges, one is a college which prepares secondary teachers for monk schools and the other is the Faculty of Education at the National University of Lao PDR, which offers a five-year B.Ed programme intended for upper secondary teachers. The range of combinations has become complex. Basic educational requirements for entry to teacher training have changed as educational access has expanded and lengthened; the government of Lao PDR is committed to the steady upgrading of teacher training qualifications so that teacher courses have lengthened; and donors have experimented with a variety of programmes designed to fill particular gaps. There are now programmes of all durations between one and five years, many of them offered in combination with different levels of prior formal schooling. There is a 5+4 program to encourage ethnic females with no more than primary schooling to receive teacher training; there are also 8+3 programmes directed mainly at ethnic minorities who have completed lower secondary. There are specialist programmes for Art (8+3) and Physical Education (11+3). Cutting across these issues of duration and combination are issues of curriculum (an 11+1 may refer to either a pre-school or a primary program) and issues of specialization (there are nine specialist offerings in the lower secondary programmes, five of which are trialing a new curriculum). With all these programmes and courses, and a national total of only 12 institutions, it is hardly surprising that the emerging picture is formidably complex.

The formal requirement for teaching in secondary school is currently a minimum of 11+3. Table 6 displays the fact that almost half (46.5 percent) of all secondary teachers do not meet the formal minimum qualification. It might be argued that in secondary teaching, subject mastery is at least as important as lengthy pre-service training in pedagogy, and therefore the distinction between 11+1 and 11+3 is not significant. On this line of argument, what matters is that both groups have 11 years of formal schooling. Even if this is accepted, it does not alter the fact that 5,453 or more than one-third of teachers in 2005/06 had an 8+3 qualification or less – meaning that they had no more basic schooling than the students they were teaching.

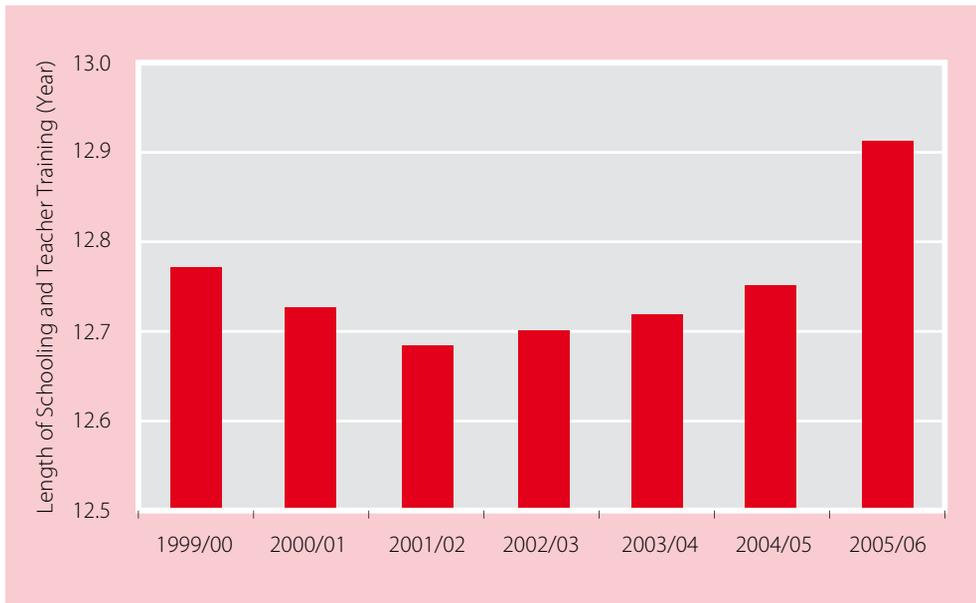
Table 6: Secondary Teachers by Qualification, 2005/06

Untrained	Formally Trained					Total teachers	Percent under-qualified
	Less than 8+3	8+3	11+1	11+3	11+4 and above		
142	352	5,101	1,434	5,211	2,889	15,129	46.5%

Source: MOE (2006a).

There are signs of recent improvement. Figure 5 rearranges the data on teacher numbers and the duration of their education (schooling plus teacher training) to calculate a weighted average duration of education embodied in secondary teachers for each year.<sup>11</sup> The year-by-year improvement is small, but it is clear that the sharp decline in the number and quality of teacher trainees at the turn of the century has been arrested. The proportion of secondary teachers with 8+3 qualifications or less fell from nearly 47 percent in 1999/00 to 36 percent in 2005/06.

Figure 5: Average Duration of Education for Secondary Teachers



Source: Calculated from data in MOE (2000a; 2001; 2003a; 2004a; 2005a; 2006a).

<sup>11</sup> Some assumptions are necessary for this procedure. While clear-cut categories such as 11+1 or 11+3 create no measurement problems, those with less than an 8+3 qualification were counted as having 7 years of education and those in the category of 11+4 and above were counted as 15.5 years.

As so often with education in the country, *aggregate* national calculations conceal a greater problem of the *distribution* of teachers. Table 7 shows the summary picture of under-qualified secondary teachers (proportion of total secondary teachers with 11+1 or less) by province. Some provinces – Phongsaly, Houaphan, Saravane, Oudomxay – are particularly disadvantaged, with two-thirds or more of their secondary teachers not meeting the formal minimum requirement. More alarming is the fact that these provinces have not improved in even a relative sense. On the national average, there has been a clear improvement in the proportion of under-qualified teachers, from 51.3 percent to 46.5 percent. But Oudomxay and Saravane are in a worse position than 5 years ago, and Phongsaly and Houaphanh have improved at a lower rate than the national average. Of those that were particularly disadvantaged five years ago, only Xiengkhouang has made a clear improvement.

**Table 7: Proportion of Under-Qualified Secondary Teachers (%), 1999/00 and 2005/06**

Province	1999/00	2005/06
Vientiane Cap.	35.4%	33.6%
Phongsaly	74.1%	70.7%
Louangnamtha	60.2%	51.8%
Oudomxay	59.0%	65.6%
Bokeo	51.1%	35.4%
Louangprabang	58.0%	46.3%
Houaphan	72.5%	68.4%
Sayaboury	50.1%	46.8%
Xiengkhouang	77.5%	51.3%
Vientiane	49.9%	45.0%
Borikhamxay	52.8%	51.5%
Khammouane	57.7%	48.6%
Savannakhet	47.4%	42.9%
Saravan	60.8%	65.9%
Sekong	26.2%	29.6%
Champasack	51.3%	44.2%
Attapeu	42.9%	33.0%
<b>Total</b>	<b>51.3%</b>	<b>46.5%</b>

Source: Calculated from data in MOE (2000a; 2006a).

### 3.3 Secondary Teachers: The Impact on Primary School

A complex change in the supply of, and demand for, teachers in Lao PDR has been underway since the financial crisis of ten years ago. Until recent years, becoming a teacher in Lao PDR was synonymous with being hired as a “quota teacher”, which is to say being employed as a permanent civil servant. The quota system had two components. The first was a system of giving full scholarships for board and tuition to bright school leavers to study at teacher training college (TTC). These quota scholarships were awarded at provincial level, and in exchange the newly-qualified teacher would return on graduation to his/her home province to teach. The second element of the quota system was that each province would fund the hiring of new teachers (“the quota”) to ensure that those who had gone away to study would have a job on their return home. It was at the time a reasonable system that identified bright students and gave them the means for further study, and provided a mechanism for each province, even those which were remote and poor, to hire trained teachers.

The quota system has been breaking down. On the supply side, the regulation that quota teachers on scholarships should return to their home province is no longer enforced, nor are newly-qualified teachers required to repay their scholarship if they do not enter teaching. Problems with an out-of-date database of teachers in the MOE make it almost impossible for the Ministry to track hiring, dismissals and transfers in sufficient detail. The severe reduction in the number of teacher colleges from 56 during the 1990s, to only 10 today means that most students in TTCs now have to break their links with their home village or district and go away for training. Once they have studied in a provincial town the attractions of returning to a village school are not overwhelming, and there are more and better-paid jobs available in urban areas. The other key supply-side factor is that although student teachers are accepted for entry into TTCs on the basis of majoring in either primary or secondary teachings, after graduation there is in practice no barrier to seeking a job as a secondary teacher, despite being primary-trained. There are neither supplementary qualifications to obtain nor conditions to fulfill.

On the demand side, the financial turmoil of 1997/98 caused provincial governments to reduce drastically the number of quota teachers whose scholarships could be funded and who could be subsequently hired. Teacher training enrolments fell substantially, as already seen in Table 1. The quota system has never fully recovered. As Table 8 indicates, the total number of quota teachers has barely increased since 2002.

**Table 8: Number of Quota Teachers**

	2002/03	2003/04	2004/05
Primary	28,571	27,697	27,614
Secondary	13,415	13,990	14,588
Total	41,986	41,687	42,202

Source: ADB (2005, Table A32).

Becoming a quota teacher is still the aspiration for a teaching career, but the nature of demand for teachers is changing. Hiring quotas have been drastically reduced, but this does not mean that graduating teachers fail to find teaching jobs. Provincial governments hire quota teachers according to their financial capacity, and under tight budget constraints and inflexible salary scales, this aspect of demand is not very responsive. But governments also hire contract teachers “off quota” where they have more flexibility both with numbers hired and terms of employment. The result is that it is becoming increasingly usual that those wanting a teaching career must first work on a contract or even volunteer basis in the expectation that, after perhaps two to three years, they will be hired as a permanent quota teacher.

The outcome of these changing supply and demand conditions is that teachers flow to where demand is greatest and conditions most congenial – and as secondary enrolments have grown rapidly in recent years, there has been no barrier to primary-trained teachers finding jobs in the secondary system, despite the fact that their 8+3 or 11+1 qualifications are not intended for secondary teaching. Where “complete secondary schools” have been formed out of former primary schools, which are no longer needed for primary teaching because they have been replaced by donor project schools, teachers may not even have had to change location. On national average, the increase in the number of secondary teachers has been satisfactory, but the price has been that a high percentage of the secondary workforce is under-qualified.

Few data exist for non-quota teachers, but it is known (Table 9) that within a virtually unchanged net total, secondary education has gained an additional 1,173 quota teachers. With an additional 39,725 students over the period, this implies the reasonable rate of one extra quota teacher for every 34 additional students. In primary education, however, there are 957 fewer quota teachers, despite an enrolment increase of 36,382 students. It is also known that the number of secondary teachers has increased from 12,209 in 2000/01 to 15,129 in 2005/06. The MOE database records that all of these are quota teachers. Since 1,173 have been new quota teachers (Table 9), where have the other 1,747 (2,920 minus 1,173) come from? The answer is that there has been an internal redistribution away from primary education. In short, few additional quota teachers have been hired, but there has been an internal redistribution in which primary teachers have been flowing into secondary teaching. More seriously, this redistribution from primary to secondary has to some extent taken place at the expense of the poorest districts.

**Table 9: Changes in the Distribution of Teachers by Poverty Level, 2002/03-2004/05**

	Primary	Secondary	Total
47 Poorest districts	-251	+318	+67
25 Poor districts	-123	+196	+73
70 Non Poor districts	-583	+672	+89
Lao PDR	-957	+1,173	+216

Source: ADB (2005, Table A32).

In the redeployment process, the non-poor districts have been the greatest net beneficiaries, both in the overall number of teachers and in the gain in secondary teachers. The poorest districts have made the lowest overall gain, and have also lost over 250 primary teachers to secondary teaching, despite the fact that the poorest districts exhibit serious disadvantage on virtually all indicators of access to primary education.

It is hard to avoid the conclusion that the net outcome has been to the detriment of both primary and secondary schools. In primary school in the poorest districts, the loss of trained teachers has brought an increase in average class size and a rise in the number of multigrade classes. There is no longer any formal mechanism to deploy teachers to districts where need is greatest. The fact that the poorest districts with the most urgent need for primary teachers lost some of them, because of the pressure induced by the development of secondary education, suggests that the vital primary school component of EFA might become an elusive goal. But secondary school is also the loser from the transfer of primary-trained teachers. Primary teachers are not qualified to teach secondary students, since they lack adequate knowledge of the individual subjects, which are a feature of the secondary curriculum.

## Section 4

# Secondary Teachers: Future Supply and Demand<sup>12</sup>

Earlier sections of this paper have explored the existing quantitative and qualitative picture of secondary teachers. Much of that existing story has its origins in the financial and educational turmoil of the late 1990s. But Lao PDR has emerged from that era. Children now entering secondary school, only just born at that time, have a perspective geared to future prospects, not to events of the past. The critical issue is not so much the history but the likely developments (and policy interventions required) in secondary students and teachers over the next five to 10 years.

The forecasts described in this section are based on the projections developed as part of the *Education for All (EFA) Action Plan 2003-2015* (MOE, 2005). These particular projections have two strong advantages. First, while designed for the specific purpose of reviewing EFA progress and targets, the underlying model is now used more widely as a tool for educational policy analysis in Lao PDR. Rather than simply creating additional projections with their own set of targets, the results presented in this section reflect assumptions developed as part of Government of Lao PDR and donor partner policy debates. Initially using a baseline of 2002/03, the projections were subsequently revised to take account of the falling urban birth rates that provided one of the surprises of the 2005 census. The summary offered here is based on the latest estimates using a baseline of 2005.

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<sup>12</sup> The *Education Sector Development Framework (ESDF) 2009-2015*, approved by the Government of Lao PDR in 2009, is now recognized as a major education sector plan for Lao PDR. The ESDF has made projections for financial needs of all sub-sectors, including secondary education, based on the newly introduced 12 year general education system (5+4+3). The targets set in the ESDF are slightly different from those used in Table 10 of this Section, with the result that the projected future teacher supply and demand referred to in this Section differs from the figures presented in the ESDF. UNESCO Bangkok, under its Capacity Development for EFA Programme (2009-2011), is currently assisting the Government to further refine the projections done for the ESDF, in particular for the secondary education sub-sector.

## 4.1 Basic Methodology

Table 10 summarizes the calculation for secondary education. Starting with existing secondary enrolments and the projected size of the secondary age group, future secondary enrolments can be estimated from the grade-by-grade flow rates (transition, dropout and repetition). The number of schools, classes and class size is calculated from policy targets and from the projected student numbers. Using assumptions and targets for student numbers and the student-teacher ratio, the number of teachers can be calculated. For example, 15,290 lower secondary teachers are required in 2014/15.

With the projection of teacher needs in place, the task then is to estimate the number of graduate teachers. This is done by projecting admissions into the teacher training colleges in the light of forecast graduates from secondary schools and the transition rate to the TTCs. Allowance is then made for progression through the various TTC programmes based on current and projected dropout rates. While the flow methodology for supply follows a similar procedure to estimating the requirements of Table 10, additional assumptions are necessary for the supply side. The first is to define exactly which group of teachers is relevant, since it is known both that there is a bewildering array of programmes in Lao teacher colleges and that secondary teaching includes almost every qualification from less than 8+3 to 11+5. Table 10 is drawn up on the assumption that the recruitment target of lower secondary teachers for 2014/15 will be limited to those with the formal minimum qualification of 11+3.<sup>13</sup>

The second, and critical, issue is to distinguish between those who graduate from TTCs and those who actually enter the teaching profession. A major concern in Lao PDR in recent years is that apparently high numbers of TTC graduates do not in practice become teachers. There is much anecdotal comment that 50 percent or more of a graduating class seeks non-teaching employment. Lao PDR is not out of line by international standards in having numbers of new teachers who choose not to enter teaching. It is usual to have considerable flexibility between educational qualifications and occupations, even for apparently specific occupations such as teaching. Unfortunately there is not much evidence for Lao PDR beyond the anecdotal.<sup>14</sup>

<sup>13</sup> Upper secondary teachers are omitted from this calculation. In principle such teachers are required to have an 11+5 qualification from the Faculty of Education at the National University of Lao PDR. Leaving aside the fact that this is more honoured in the breach than the observation, the Faculty of Education lies outside the TTC institutions which form a sub-sector of the EFAMOD projections. Upper secondary requirements are bought back into the picture in subsequent calculations.

<sup>14</sup> The most reliable evidence comes from a study of training and recruitment of two provinces (Luang Namtha and Xieng Khouang) carried out as part of the TTEST donor project. This study found that on average 23.9 percent of 11+1 graduates and 38.4 percent of 8+3 graduates were not recruited into permanent teaching positions as new graduates. These numbers need careful interpretation. First, the finding for the 11+1 graduates is not far out of line with the evidence for other countries. Second, these are averages over three cohorts, and are unquestionably inflated by the fact that for the 1999/00 cohort serious financial difficulties led to a sharply reduced provincial hiring quota for new teachers. Third, as the study itself acknowledges, graduates were only counted as entering the teaching profession if they were hired as “quota” civil servants. Those becoming contract or volunteer teachers were not considered. As noted earlier, employment conditions for Lao teachers are changing, and it is likely that a significantly higher number of students than indicated in the TTEST study became teachers but did not have permanent positions.

Table 10: Projected Requirements for Secondary Teachers, 2005/06-2014/15

	2005/06	2010/11	2014/15
<b>Secondary age population</b>	1,479,185	1,508,501	1,408,388
<b>Enrolments</b>			
Total, lower secondary	243,131	382,882	436,862
Total, upper secondary	147,510	116,213	238,129
Total, all secondary	390,641	499,095	674,991
<b>Schools</b>			
No. of lower secondary schools	642	655	847
No. of upper secondary schools	28	28	28
Combined secondary	310	485	625
Total schools	980	1,168	1,500
School size	399	427	450
<b>Classrooms and classes</b>			
No. of classrooms, lower secondary	5,217	8,990	10,922
No. of classrooms, upper secondary	2,841	2,380	5,292
Total classes, lower secondary	5,306	8,990	10,922
Total classes, upper secondary	2,752	2,380	5,292
Total classes, all secondary	8,058	11,371	16,213
Class size, lower secondary	45.8	42.6	40.0
Class size, upper secondary	53.6	48.8	45.0
<b>Teachers</b>			
Teachers per class, lower secondary	1.48	1.29	1.40
Student: teacher ratio, lower secondary	31.0	33.0	28.6
Total number of teachers, lower secondary	7,855	11,601	15,290
Teachers per class, upper secondary	2.7	2.4	2.0
Student teacher ratio, upper secondary	19.8	20.4	22.5
Total number of teachers, upper secondary	7,465	5,686	10,584
Total number of teachers, all secondary	15,132	17,287	25,874
Teacher attrition rate	0.06	0.05	0.05
Additional teachers, lower secondary	437	3,216	705
Replacement teachers (attrition) lower secondary	443	419	729
Teachers to recruit, lower secondary	880	3,635	1,435
Additional teachers, upper secondary	247	0	361
Replacement teachers (attrition) upper secondary	431	421	511
Teachers to recruit, upper secondary	678	421	872
Total additional teachers, all secondary	684	3,216	1,066
Total replacement teachers, all secondary	874	841	1,240
<b>Total teachers to recruit, all secondary education</b>	<b>1,558</b>	<b>4,057</b>	<b>2,307</b>

Source: Compiled from data in MOE (2005, Chapter 4).

A further complication in assessing the reliability of the teacher output projections is that in recent years a substantial share of enrolments in TTCs has consisted of fee-paying “special course” students who are formally enrolled but are not necessarily pursuing a teaching career. While there is little clear evidence, the assumption is that they choose this pattern of enrolment because it is the best post-secondary qualification they can obtain at the time. Study at TTC provides a way-station for possible later upgrading elsewhere. Some may become teachers in due course, but the assumption is that most do not. Table 11 allows plausibly for a decline in the proportion of quota enrolments, an increase in the share of students in special courses and the entry into teaching of only 80 percent of the graduating class, but it has to be acknowledged that the precise size of these adjustments is not known with precision.

**Table 11: Projected Supply of Lower Secondary Teachers**

	2005/06	2010/11	2014/15
<b>Total Enrolments (11+3 programmes)</b>	7,529	16,372	13,705
% quota students	63%	57%	50%
% students in special courses	37%	43%	50%
Graduates	1,202	3,888	5,448
% of graduates joining teaching	8%	8%	8%
<b>Requirements and supply</b>			
Supply of new lower secondary teachers	962	3,110	4,359
Requirements for lower secondary teachers	880	3,635	1,435
Shortage (-) or surplus (+)	+82	-525	+2,924

Source: Compiled from data in MOE (2005, Chapter 4).

The bottom entries of Table 11 compare the projected supply of new lower secondary teachers (4,359 in 2014/15) with the corresponding requirements (1,435 in 2014/15 from Table 12). Simple arithmetic produces a forecast shortage or surplus.

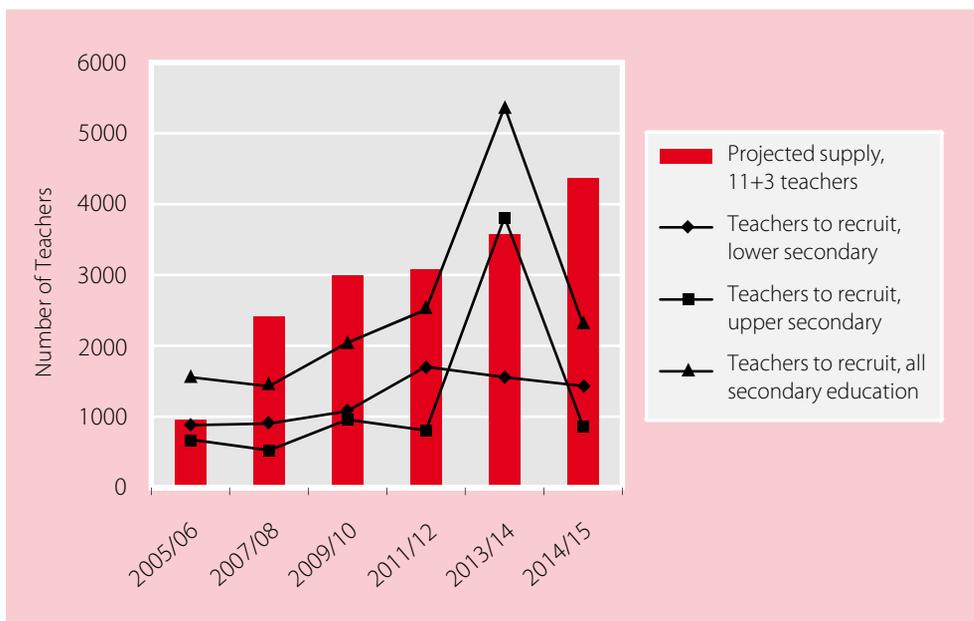
## 4.2 Interpreting the Projections

Figure 6 puts together the results from Tables 10 and 11 in order to see at a glance the broader trend of secondary teacher requirements and supply over the next ten years. The first and most striking finding is that over the ten-year period, the annual supply of 11+3 new teachers entering the profession will exceed the projected annual requirements. In plain language, the projections imply a surplus of qualified lower secondary teachers.<sup>15</sup> Second, while it was not

<sup>15</sup> This does not mean that the problem of under-qualified teachers will be solved by 2014/15, but that numerically, the additional qualified teachers supplied in each year will exceed the required recruitment of such teachers. In short, better qualified teachers will be diffusing into the ranks of the lower secondary teaching workforce and raising the average level of qualification.

formally possible to estimate the detailed annual supply of qualified 11+5 upper secondary teachers, it is possible to recognize the practical reality that many 11+3 graduates will continue to be hired for upper secondary teaching. Figure 6 adds “teachers to recruit, upper secondary” to the graph, together with the total of required lower and upper secondary teachers. It then becomes apparent that the projected supply of new 11+3 teachers is not only sufficient for lower secondary school: in most years it is also adequate to cover requirements for all secondary education including upper secondary.<sup>16</sup>

Figure 6: Requirements and Supply of Secondary Teachers, 2005/06-2014/15



Source: Calculated from data in MOE (2005, Chapter 4).

<sup>16</sup> The exception is the “blip” in the graph in 2013/14 because of proposed policy changes. As already noted in footnotes 3 and 12, MOE is implementing a shift from a 5+3+3 to a 5+4+3 to conform to the international standard of nine years of basic schooling. MOE also wishes to phase out the 11+1 program for teachers and move to 11+2 and then 11+3 qualifications. These changes create short-term perturbations in enrolments and teacher numbers in the years when the policy changes have their major impact. These policies will, of course, require careful planning to ensure that students are not disadvantaged at the time of the changes, but they do not alter the conclusion of a generally adequate trend in the long-term supply of secondary teachers.

While there is considerable uncertainty about these projections, the major implication of Figure 6 is clear. Over the years until 2015, there will be on average a substantial and persisting surplus in the annual supply of teachers who have the formal qualification (11+3) for teaching in secondary school. A careful comparison of Tables 10 and 11 suggests that the problem is not insufficient student enrolments in 11+3 programmes but encouraging sufficient numbers of yearly teacher graduates to actually enter the profession. Table 11 suggests that there will be sufficient students graduating from the 11+3 programmes to meet the prospective demand for qualified secondary teachers. In short, the pool of potential teachers is quite large. The problem comes when that yearly output is adjusted for those who will actually go into teaching. This in turn suggests that the pay and conditions of teachers in Lao PDR need attention. The next section turns to this issue.

## Section 5

# Teachers' Pay

For many years, teachers' salaries in Lao PDR have been considered very low. Mingat (1998) estimated average teacher salaries from pay scale data for the period up to 1996/97. Noonan (2004) provided a detailed analysis of the structure of primary and secondary salary incentives, also using data from the pay scale. MOE (2003b) collected data on provincial salary expenditure in order to estimate teacher salaries by level of education. The result of these studies was that teacher salaries were far below the level necessary to ensure an adequate supply of high quality teachers. There is evidence to suggest that within more recent years teacher salaries have improved substantially, and this section reviews the latest findings.

### 5.1 The Structure of Teachers' Pay

Salaries of teachers are based on the established civil service salary scale.<sup>17</sup> There are three critical characteristics of this scale. First, the salary scale is a two-dimensional matrix of *grades* and *steps*. There are five salary grades plus a special grade for ministers and vice-ministers. Each step represents two years of employment, and (in the absence of demotion or promotion) every second year each civil servant is automatically moved up one step. After seven salary steps, performance-based promotion to the next grade is possible. This can be based on examination or assessment and recommendation by supervisors. After a further seven salary steps, promotion to the next grade is again possible. Table 12 shows the scale in effect in November 2006.

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<sup>17</sup> In recent years the employment status and pay of teachers has become very complex, with the emergence of contract and volunteer teachers working under a variety of employment conditions. Strictly speaking, only "regular" teachers employed under civil service quota positions are paid according to the civil service scale. They have in effect a permanent position, and they are paid on the civil service pay scale with all the standard supplements and pension. Thanks largely to the work of Noonan (2004) these complications are now well understood and are not central to the concerns of the present paper.

**Table 12: Civil Service Pay Scale (Kip), 2006/07**

Step	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
1	270,000	294,000	350,000	438,000	558,000
2	272,000	300,000	360,000	452,000	576,000
3	274,000	306,000	370,000	466,000	594,000
4	276,000	312,000	380,000	480,000	612,000
5	278,000	318,000	390,000	494,000	630,000
6	280,000	324,000	400,000	508,000	648,000
7	282,000	330,000	410,000	522,000	666,000
8	288,000	340,000	424,000	540,000	688,000
9	294,000	350,000	438,000	558,000	710,000
10	300,000	360,000	452,000	576,000	732,000
11	306,000	370,000	466,000	594,000	754,000
12	312,000	380,000	480,000	612,000	776,000
13	318,000	390,000	494,000	630,000	798,000
14	324,000	400,000	508,000	648,000	820,000
15	330,000	410,000	522,000	666,000	842,000

Source: MOE Department of Finance, personal communication (2006).

Grade is dependent largely on employment position, which in turn is determined mainly by initial level of qualification. Table 13 shows starting grades and steps for teachers in 2006/07.

**Table 13: Starting Salaries for Teachers, 2006/07**

Level of qualification	Starting grade & step	Starting salary (Kip)
Primary Certificate	Grade 1, step 1	270,000
Lower Secondary Diploma	Grade 1, step 3	274,000
Upper Secondary Diploma	Grade 1, step 5	278,000
5+3	Grade 2, step 2	300,000
5+4	Grade 3, step 1	350,000
8+3	Grade 3, step 1	350,000
11+1	Grade 3, step 2	360,000
11+3	Grade 4, step 1	438,000
11+5	Grade 4, step 3	466,000

Source: MOE Department of Finance, personal communication (2006).

The second characteristic is that the actual amounts paid under the basic scale are calculated as the product of a base number (which is largely invariant) and an index intended to adjust for cost-of-living increases. For example, in 2001/02 the base number for Grade 1/Step 1 was 135 and the index was 1,100 Kip. Base 135 *times* index 1,100 gives a scale amount of 155,250 Kip for Grade 1/Step 1. By 2006/07 the base remained at 135 but the index increased to 2,000 Kip so the scale amount payable for Grade 1/Step 1 became 270,000 Kip, as shown in Table 13.

The third key characteristic is that in addition to the base scale there is a wide variety of supplements (Table 14). The supplements are a mixed collection. Some (such as those for wife and children) are akin to welfare payments. Others are genuinely intended to provide incentives to teach in remote or difficult areas. The teaching supplement is in effect a pay rise for teachers, payable only in acknowledgement that the salary has fallen far below appropriate levels. The supplements have become a quantitatively important part of the civil service “salary package”. In individual cases, the supplements can amount to as much as 40 percent of take-home pay, but on average, supplements make up 20 to 25 percent of gross pay for teachers.

**Table 14: Supplements to the Base Scale**

Type of Supplement	Monthly amount (Kip)
Management or pedagogical function	Varies with function
Years of civil service employment	1,500 Kip per year of service
Teaching supplement	18,000
Remote & isolated area	15% of net salary
Remote & mountainous area	20% of net salary
Especially difficult areas	25% of net salary
Teaching 2-grade classes	25% of base salary
Teaching 3-grade classes	50% of base salary
Housewife	15,000
Each child	19,000

Source: MOE (2006c).

## 5.2 The Current Level of Pay

In the past, average teacher salaries in Lao PDR have had to be estimated by indirect means. Survey data of actual provincial expenditure for salaries has not been available. One way around this limitation was to make use of the fact that teacher salaries are keyed rather precisely to the basic civil service scale. Because the starting grades and steps and the standard rate of progression are known, and because the MOE teacher statistics record the length of experience of teachers, it was possible to infer the current grade and step (and hence the average salary) from the knowledge of the scale and the average experience of teachers at each level of schooling (Mingat, 1998).

More direct evidence is now available using a new and more detailed payroll record for teachers. Table 15 shows the current average salaries of teachers in these provinces, inclusive of all subsidies and supplements.

**Table 15: Average Teacher Salaries in Lao PDR, 2006/07**

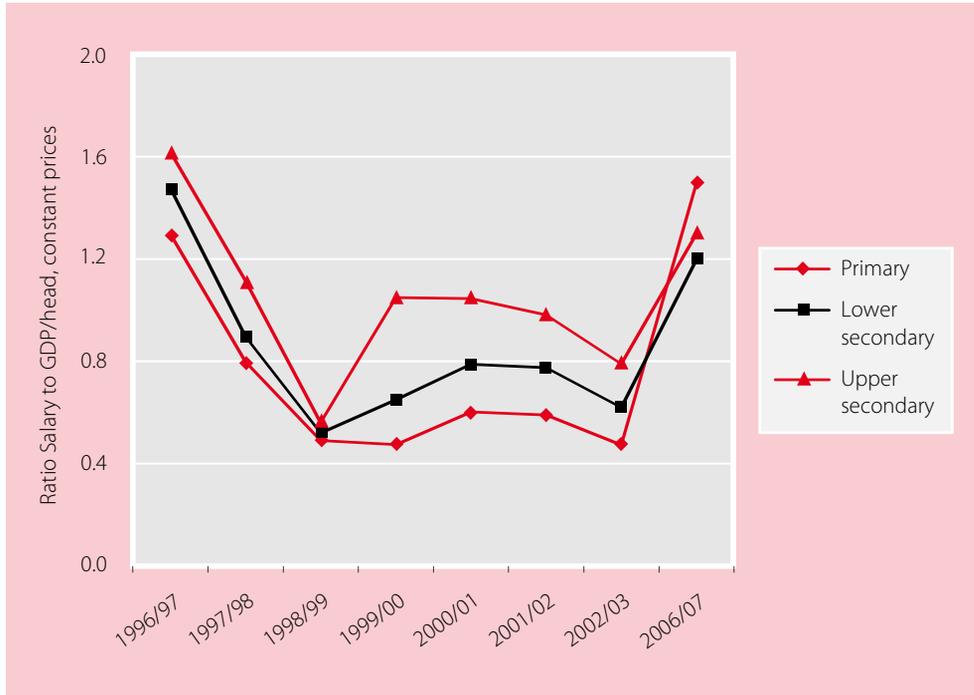
	Monthly salary (Kip)	Annual salary USD\$ (R/E = 10,500)	Salary as ratio of GNP per head
Primary	504,735	577	1.15
Lower secondary	527,014	602	1.21
Upper secondary	569,724	651	1.30
Administration	495,718	566	1.13

*Source:* Calculated from data in MOE (2006b).

It has been a long road back for teachers' salaries in Lao PDR. Prior to the crash of 1997/98 teachers at all levels could not be described as well paid but nor were they badly off relative to GDP per head. Secondary teachers were earning about 50 percent more than the average income. After the crash there followed several years in which teachers were paid little more than half of the national average income (Figure 7). Teachers at all levels have approximately recovered their relative position of ten years ago, with the recovery due to an increasing recognition in Lao PDR that the precipitate decline in salaries was at least partly the explanation for teacher graduates not entering teaching.

The MOE is acutely aware that it is problematic to award special pay rises to teachers as long as they are paid on the regular civil service scale. Civil servants in general are very poorly paid, and any pay rise for teachers will spill over, unaffordably, to the rest of the public sector. Much policy analysis is taking place within MOE to design special incentives for outstanding teachers (since these can be quarantined from the wider public service) and to create non-pecuniary incentives such as honorific titles. Programmes such as these have their place, but they do not substitute for an adequate basic scale.

Figure 7: Trends in Teachers' Salaries



Source: Calculated from data in MOE (2005b, 2006b).

Overwhelmingly, the pay scale and supplements are based on initial qualification and time served, rather than on performance, demonstrated competence, and taking on in-service training or additional responsibilities in school. Additional supplements can be designed to include such objectives. However, a proliferation of supplements grafted on to the existing scale carries the risk of making an already complex pay system even more complex. It has to be recognized, however, that the existing supplements have become an entrenched and financially important component of the overall salary for civil servants. Teachers are unlikely to support a new pay scale without careful assurances that reform does not simply mean disappearance of the supplements and a consequent reduction in pay.

### 5.3 The Career Path for Teachers

The starting salary for teachers can be inferred from the basic scale, and average earnings can be calculated from the payroll data. An additional piece of useful information is to know the career path or expected lifetime earnings of teachers. Leaving aside the subsidies and supplements, a career path can be simulated from the basic civil service scale under the simplified assumption of a teacher who routinely "climbs the steps" every two years but who

does not progress to a higher grade. Figure 8 combines the previous information to show the starting salary and pay progression of teachers.

Figure 8: Salary Progression for Teachers



Note: Calculated from Tables 12 and 13 above.  
 Source: MOE Department of Finance, personal communication (2006).

The figure displays dramatically the tight salary compression of the existing scale. The typical secondary teacher with an 11+1 or 11+3 qualification is on a salary scale that, over a 30-year working lifetime, will increase by only 1.3 percent a year. That is a poor return on additional experience. Lifetime salary prospects are of course improved if that teacher is promoted, but even here substantial overlap between grades (compare the columns of Table 12) still means that the average annual salary increase is only of the order of two percent. The outcome of this very flat scale can be seen by returning to Figure 8. All teachers have benefited from the pay rises of recent years, but the difference between the average salary for upper secondary and primary is very tight. On average, an upper secondary teacher earns no more than 13 percent that of an average primary teacher. This is not much return on the earnings foregone from the longer period of pre-service training.

## Section 6

# Conclusions and Implications for Policy

### 6.1 Policy for Secondary Education

It is easy to be dismayed by the scale of the problems confronting secondary education in Lao PDR. The size of classes, the low level of teachers' qualifications, and the provincial and district disparities all speak volumes about the magnitude of the task ahead. The key unifying feature of these symptoms is that secondary education in Lao PDR is now confronting the implications of the country's credible progress towards universal basic education. Like so many developing countries, its progress with primary enrolments means that it must now cope with rising aspirations and demand for secondary access, while at the same time, it still needs to focus on the 16 percent of the age group which does not yet receive full primary schooling.

It is useful to emphasize this background because in many ways education policy in Lao PDR has been successful. Indeed, there could hardly be a better textbook example of a developing country in which government and donors have worked together to build a strong policy focus on basic education. This is a focus which puts into practice what has been learned around the world in the last 20 to 30 years about education, poverty, and the overwhelming importance of building upon a strong framework of universal primary schooling.<sup>18</sup>

Despite this policy success, the problems of secondary schooling are, in a sense, problems which have crept almost without warning onto the policy agenda. Much of the recent growth in secondary enrolments (and the consequential concern about teachers) has not come in response to implementing policy decisions and targets: it has happened because provincial and district education authorities have created "facts on the ground", adopting a permissive attitude to secondary enrolments and accommodating the demand for secondary education by enrolling all those who are qualified and wish to do so. Policy justification of

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<sup>18</sup> This is not to deny that the problems of primary schooling in Lao PDR can sometimes seem intractable. The problems of insufficient government recurrent funding to match the inflow of donor support, the disparities in the remote and rural districts, the shortage of classrooms, the persistence of incomplete primary schools, the continuing lack of teachers with skills in teaching multigrade classes and the occasional lack of operational value in the three poverty categories all point to continuing, not settled, issues of government and donor policy for basic education.

secondary and post-secondary expansion has come after the event, and is then implicitly underwritten by allowing public funding to follow the enrolments.

Secondary education in Lao PDR is now facing a process, which is being telescoped into a much shorter period than the historical norm. It has become commonplace to note that primary and secondary education received great attention in East Asia and were critically important to vigorous economic growth by increasing the relative abundance of educated workers and reducing income inequality through a broadened human capital base (WB, 1993). It is less often appreciated that these were not simply post-1945 phenomena, related closely in time to their emergence as “Asian tiger” or “miracle” economies. Japan laid the foundations for its own universal primary access in the second half of the 19th century and, as Japanese colonies of the time, Korea and Taiwan also had extensive systems of primary schooling well before 1945. The expansion of secondary education after the 1960s was thus able to build on a long-standing foundation.

This is not the case in Lao PDR. Lao PDR's education policy has so far been appropriately targeted, but under the pressure of enrolment growth, policy must now change direction. Most crucially, it must now give more explicit attention to secondary education while at the same time not yet being able to announce the achievement of EFA.

There are two specific aspects of this changed policy focus. First, what has hitherto been an overwhelming concentration on policies for EFA must start to transform into a *sector-wide approach* (SWAp). In this way integrated policies for all sub-sectors of education can be appropriately reviewed. It is important to be clear about the reasons for this change. Among donors there would be no serious debate about the desirability of moving in due course to a SWAp. Right around the developing world these are now the donors' mechanisms of choice for the delivery of financial support. Indeed, the first specific steps have been taken in Lao PDR.<sup>19</sup> However, debate about the shift to a SWAp often revolves around whether the partner government is yet ready to meet the various technical and financial preconditions usually set for the introduction of a SWAp and the associated move to general budget support. Among these conditions are macro-economic stability, budget transparency, a medium-term expenditure framework, and general capacity within the government to manage complex allocation and accountability decisions.

These donor requirements are, of course, critically important, and they are important for the partner government as well as donors. But in the case of Lao PDR's education, the argument for a SWAp is not based mainly on techniques of delivering donor support: the case for a SWAp is that it is now a matter of urgency to develop policies on public funding, cost-recovery, school-building and curriculum for secondary (and post-secondary) education within an overall sector context that does not lose sight of the continuing task of achieving EFA. Policies for secondary teachers are urgent, but they cannot be separated from policies for primary teachers, because at present, as argued in this paper, secondary teacher supply is being fed partly by an exodus from the primary system. The number and quality of secondary teachers are not a separate and additional issue to the question of primary teachers.

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<sup>19</sup> At the time of the preparation of this study (2007), the ADB was supporting technical assistance to prepare the foundation for introduction of SWAp.

Second, it would be useful for donors to review what can be accurately described as their overwhelming endorsement of human capacity development and training to the neglect of the traditional function of “bricks and mortar” assistance. It might be argued that such civil works were delivered in the past through project assistance, which is no longer compatible with programme assistance and budget support. But the method of delivery must not be confused with the content of what is required. It was argued earlier that one of the great ironies of large secondary classes in Lao PDR is that it is not predominantly a problem of inadequate teacher numbers: it is instead a problem of drastic shortage of classrooms in which the teachers work. The calculations in this paper suggest that even the modest target of reducing class size from 50 to 44 requires more than 1,000 additional classrooms. These calculations need to be refined and combined with an exercise in school mapping of the sort that is now commonplace in planning primary classes and schools.

## 6.2 Improving the Supply of Trained Teachers: Can Teacher Colleges Respond?

The Government of Lao PDR is committed to improving the quality of its teachers, including secondary teachers, through longer periods of pre-service training. The intention is to move steadily from the existing range of 11+1 programmes to a more consistent standard of 11+3, *via* an 11+2 programme which is currently being piloted. The existing 5+4 and 8+3 programmes will continue to play a specialist role, especially in remote (and typically ethnic areas) where current levels of formal education are low, but otherwise such short duration programmes will diminish in importance.

It has to be said that there is no convincing evidence, from anywhere in the world, that longer periods of pre-service training pay off in terms of enhanced performance of students in schools. It should also be noted that, unlike primary teaching, the professional identity of secondary teachers is not constructed around the skills of pedagogy but rather around their discipline of specialization. As Lao PDR now starts to move to a phase of educational development, in which larger numbers of young people complete secondary schooling and want a tertiary qualification, school teaching will only attract its share of capable entrants if it draws upon the general pool of tertiary-educated young people. This is exactly the process which has taken place in western industrialized countries. A generation ago, jobs such as teaching and nursing were typically provided in specialized colleges, offering relatively short-term and often strongly practice-based courses at pre-degree level.

This is not the place to discuss whether the quality of nursing and teaching has actually improved by moving trainees from their traditional base in the hospital ward or the local teachers’ college to the wider academic environment of a degree institution. In the Lao PDR context the critical question is whether the existing TTCs can respond effectively to the increasing demands that will be placed on them.

Foremost among these concerns is the unit cost of a student in teacher education. Costs in the TTCs must be interpreted very cautiously. Accounting systems are weak, and it is not possible to be confident that stated expenditures actually include not just public money but

also the fees paid by the substantial proportion of “special students”. With this qualification, Table 16 shows unit costs for the various sub-sectors of education.

**Table 16: Recurrent Unit Costs by Level of Education, 2005/06**

Unit cost	Primary	Lower secondary	Upper secondary	TVET	Teacher education	Higher
USD\$	17.7	18.6	35.2	103.6	131.3	127.3
As % of per-capita GDP	3.23%	3.40%	6.44%	19.0%	24.0%	23.3%

Source: WB (2007, Table 25).

One obvious inference is that the Lao PDR’s education system operates with very limited resources, especially regarding basic schooling. The international developing country ratio for primary unit costs as a proportion of GDP per head varies from seven to 14 percent, but the Lao ratio is 3.2 percent of GDP per head. The lower secondary ratio for Lao PDR is 3.4 percent, a mere fraction of the 20 to 24 percent typical of other Asian developing countries. In many Lao secondary schools, especially those outside major towns, classrooms, textbooks, and learning materials are in desperately short supply. Thus, additional teaching resources and maintenance of infrastructure are crucial for better use of teachers.

The second inference is that data limitations would have to be truly substantial in order to overturn the conclusion that within an educational system of low resources, teacher education is very expensive. Lao PDR undertook a major rationalization of teacher colleges in the late 1990s, but it is apparent that the cost structure of teacher education needs further attention. Its enrolment is only half that of higher education but it receives 80 percent of the amount received by higher education. Its unit costs exceed those of any other sub-sector of education.

It is not difficult to find the reasons for this high unit cost. Earlier sections of this paper described the multiplicity of courses, programmes, qualifications and curricula, and the mixture of regular or “quota” students, who are presumed to want to become teachers and who receive a scholarship, and the special students who are in many cases there merely to pick up a qualification along the way to something else. The TTC staff have a very low workload of around 12 to 18 hours per week. Notwithstanding the time needed for reflection and preparation, this is a low requirement for staff employed, not as university research-oriented academics but as full-time teachers.

Despite their high levels of expenditure, and the boost to their funding from the fees paid by special students, the TTCs are in effect bankrupt, with most of their recurrent funding dedicated to salaries. Some of the colleges have had trouble finding enough finance to pay their utility bills. There is an almost complete absence of specialization or economies of scale. In these circumstances it is not surprising, although very alarming, that the TTCs see their

future as multi-purpose campuses, offering a wide variety of courses and qualifications. It is not difficult to predict that the result would be a drift away from dedicated programmes of pre-service teacher education. While there is much to be said for tertiary institutions providing a market-oriented service for which students are prepared to pay, the consequences for teacher supply in Lao PDR could be disastrous.

The underlying economics and supply-response of Lao PDR's teacher colleges have so far been disguised under the active programmes of constant teacher upgrade, but it is becoming increasingly apparent that imposing longer periods of teacher education on the existing inefficient and costly structure is nowhere near an effective use of resources. Given the objectives of secondary expansion, and the requirements for better-qualified teachers, it is timely to reconsider whether the existing and anticipated teachers' programmes are appropriate for the task.

### 6.3 Attracting and Retaining Secondary Teachers

Teacher salaries have improved in very recent times, and the MOE has devoted considerable resources to reviewing the ways in which pecuniary and non-pecuniary incentives can be improved within a tight budget ceiling. Given the range of supplements and subsidies already offered to teachers to teach in remote areas (with supplements such as those for multigrade teaching geared towards primary school), it is tempting to conclude that what is needed is a new set of subsidies, more explicitly designed to attract teachers into secondary teaching in remote areas. While there may be some limited scope for this, it has been shown convincingly (Noonan and Xaiyasensouk, 2007) that there is no plausible evidence to support the idea that a range of salary supplements has actually been successful in attracting teachers to go to the remote areas. The fundamental reason is that such supplements provide an extrinsic motivation that may have a short-term impact, but which does not really get to grips with the intrinsic personal motivations for teaching, especially in a remote area.

What really matters is to train and hire the ones who do want to become teachers and are prepared to do so in their home districts. The evidence is that such candidates are often poor, come from relatively low socio-economic status homes, and come from poor communities. If they receive teacher training, they tend to become teachers. In the Lao PDR – Australia Basic Education Project (LABEP) almost all trainees (all of whom came from rural and remote communities), returned to their communities and began serving as teachers upon completion of the programme. Similarly, under UNICEF's programme of providing in-service and upgrade training to unqualified and under-qualified teachers *in situ*, most teachers returned to their communities because essentially they never left.

There is no suggestion of unraveling the important TTC consolidations that took place during the 1990s, but it is increasingly clear that in some cases a vital linkage with the local community was lost. There needs to be a renewed attempt to offer teacher training programmes, which in their location and duration will attract local students who will be happy to stay and teach in their local community after graduation. Lao policy makers have become increasingly familiar with this notion for primary teachers, but the same concepts now have to be applied to potential secondary teachers.

## Secondary Teachers: Measuring the Impact on Student Outcomes

The evidence on secondary teachers in Lao PDR adds up to a story of under-qualified teachers, large classes, insufficient texts, learning materials, libraries and laboratories. Secondary schools in small towns and rural areas are especially disadvantaged. It may seem axiomatic that student learning cannot thrive in this environment, but *inputs* into the educational process are not necessarily a reliable guide to student outcomes. There is a large international literature that tries to unravel the statistical relationships between inputs and student performance, and variations in outcomes (as measured by test or examination results) do not always support common beliefs about increased expenditure, smaller classes, or longer pre-service preparation for teachers.<sup>20</sup> An attempt was made to explore these relationships in Lao PDR's secondary education by examining the statistical impact of school characteristics such as size, location, and teachers on student performance in the Grade 11 national examination. The focus of the investigation was on the impact of teachers (their numbers, education, qualifications, and their experience) on student performance, while holding constant the effect of other school characteristics. It has to be recorded that this investigation produced mostly non-significant statistical results, and this Annex describes some of the possible reasons.

The limitations of such a study are familiar from the international literature. Schools attempt to accomplish many objectives and to equip students with a range of skills beyond the cognitive knowledge measured by exam results. Poorly-designed examinations may not even measure academic achievement in a convincing way. In Lao PDR, as in most countries, the secondary exams are norm- rather than criterion-referenced, so comparisons over time are not meaningful.<sup>21</sup> The investigation has to be confined to a cross-section comparison of secondary schools in a given year. The data on school and teacher characteristics in Lao PDR are excellent, and this database can be matched with student scores in the Grade 11

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<sup>20</sup> Much of the evidence comes from the United States, but Glewwe (2002) surveys the effect of educational policies on learning in developing countries. Newhouse and Beegle (2005) provide an example of a specific application in a developing country.

<sup>21</sup> That is to say, the examinations show how well students have performed in relation to each other, not whether they have mastered a particular body of knowledge.

examination, but data on student characteristics (other than ethnic group) are not available. This is a serious omission, because there is much evidence from the international literature that family background – family income, education of parents, parental expectations for their children – are an important and perhaps decisive influence on student achievement.

And, not least, there is often a problem of what is known technically as endogeneity, or reciprocal causality. One example of this is selection bias. Not all students, especially in towns where there may be a choice of secondary schools, simply attend the nearest school: parents may choose to send their children to perceived “good” schools. Such schools may owe their high performance at least partly to selection by motivated families, and so a mutual cause-and-effect relationship between family background and school performance is established.<sup>22</sup> Statistical techniques can in principle disentangle these relationships, but only by the difficult task of identifying exogenous variables that are genuinely a cause but not an effect of school performance. Distinguishing good schools from good students is by no means an easy task.

These problems should not be ignored, but nor do they diminish the value of a partial exploration of a wide and complex issue. Only by constructing evidence step by step can data be improved and the relationship between inputs into the teaching process and academic outcomes be better understood in any given school system.

## 1 Measuring Academic Performance

The starting point was to compile a database of the Grade 11 examination results for the end of the 2005/06 school year. The Grade 11 exam consists of 8 subjects, each of which is marked out of 10. A standard pass in the exam is obtained by achieving five or more marks in each of the eight subjects. The maximum mark in the exam is therefore 80, with 40 out of 80 being a passing score. Data were not available on marks for the individual subjects, but the distribution of overall scores for each of the 42,699 students taking the exam is shown in Annex Figure 1.

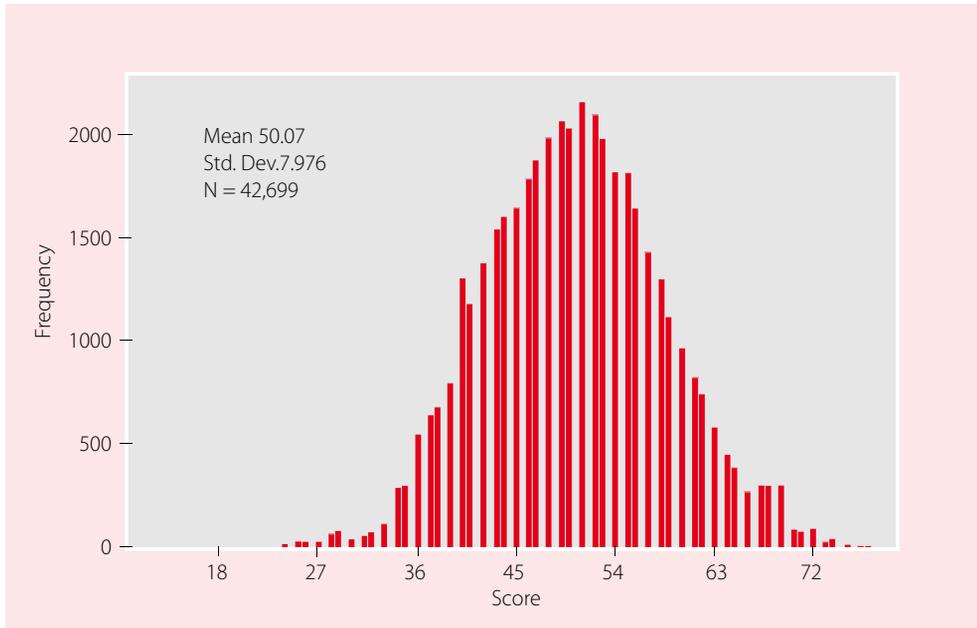
Prominent in the figure is the relatively narrow range of results. The scores follow an approximately normal distribution, but with a greater concentration of scores clustered around the mean than a standard normal curve. Almost 71 percent of scores fall within +/- one standard deviation of the mean (compared with 68.3 percent that would be expected in a standard normal curve) and 97 percent of scores fall within +/- two standard deviations (compared with 95.4 percent in a standard curve).

Also prominent is the “lumpiness” of marks below the mean (left-hand side of the histogram) compared to the smooth path followed by marks above the mean. Particularly noticeable are the outlying observations for the pass mark of 40 and for the range 35-45 marks. The explanation for these outliers can be found in the adjustments for students who do not meet the pass criterion of at least five out of 10 in all subjects. Such students may still

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<sup>22</sup> There can also be the complication of “selecting out”, in which schools attempt to retain only the potentially high-performing students in the assessable upper years of high school.

Annex Figure 1: Distribution of Scores, Grade 11 Examination, 2005/06



Source: Calculated from data in MOE (2007b).

earn an overall pass. There is, for example, provision for a student whose overall performance is good but who is weak in one subject. A student with a score of less than five (but not less than three) in one subject will still earn an overall pass provided the average of the 8 subjects is more than 5/10. If the average of the 8 subjects is less than five, the student might still be awarded an overall pass by taking into account Grade 11 coursework in the failed subject(s). In such a case the combined exam and coursework score for the failed subject must be ten or more. If the student meets this test, he or she is considered to have passed the exam, but the overall score recorded will reflect the subject exam result. It is possible, therefore, for a student to pass the exam but with a recorded score less than 40/80.

It is entirely normal when tallying results in any exam system to take into account special circumstances such as sickness and consequential poor performance on a particular day; and it is appropriate for coursework results to be used as the statistical moderator.<sup>23</sup> The problem in Lao PDR is that neither the extent of the adjustments nor the reliability and comparability across students of the coursework adjustment is known. The sample contained 10,808

<sup>23</sup> Sometimes, coursework performance is formally combined with exam marks to give an overall assessment. For example, in several education authorities in Australia, school-based assessment counts for 50 percent of overall student assessment at Grade 12. It is usual in such circumstances to ensure that school-based marks (which are likely to vary in the standards and scales used) are converted to a common standard of assessment through statistical moderation.

students (25 percent of the total) whose score was less than 45 and whose mean score was the passing grade of 40. The prominent “blips” in the range of scores 35-45 seen in Annex Figure 1 suggest that there may be a substantial number of what might be described as administered results. Such results may bear little or no functional relationship to inputs into the teaching process.

The critical question is how individual student scores can be converted into a useful measure of Grade 11 performance by the school.<sup>24</sup> A simple and obvious measure is to use the student scores to calculate the average score for each school, but this simple measure is not entirely satisfactory. The average score for a school says nothing about the distribution of scores: a school may have an impressive average due to a few high-flying students but it may also have a long “tail” of poor performers. There is also the problem that the average for some schools may be unreliable because of the uncertain basis of student scores in the 35-45 range. Another possibility – conceptually of great importance in any high-stakes school-leaving exam – is to distinguish between pass and fail students. This is of doubtful value in Lao PDR, not only because 88 percent of students achieve a passing score of at least 40/80, but also because (for reasons discussed above) an unknown number of those with a recorded score below 40 will nonetheless be considered to have passed.

What is needed is a measure that genuinely distinguishes between good and poor performing schools, that reflects the average performance of the school and not just a sub-set of students, that makes some allowance for the range of results in the school, and that gives lesser weight to the possibly unreliable observations in the scores below 45, without biasing the results by arbitrarily excluding them altogether.<sup>25</sup> No single measure fully meets this objective, and the procedure was to test a variety of performance measures and estimation methods.

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<sup>24</sup> It needs to be reiterated that although exam scores for all Grade 11 students in 2005/06 were collected, it was not possible to base the study directly on the sample of students. This is partly because no other information was available for student and family characteristics (apart from exam score and school attended) and because the focus of the study was on the characteristics of the school and its teachers (for which good data existed).

<sup>25</sup> In statistical work the identification of outlier results and their exclusion from the analysis is a common and generally acceptable practice. In the case of the Grade 11 scores it is not possible to distinguish unreliable results from genuinely low-achieving students in the troublesome range of 35-45 marks, nor is it feasible to exclude from the sample all students with a score of less than 40 or 45 marks, because this distorts the calculations on the input side of the equation. For example, one school had 267 students with a score of 40 or less out of a total of 351 who sat the exam in that school. If all the low-scoring students are excluded, should input variables such as the student-teacher ratio be calculated using the total of 351 or the 84 remaining after the exclusion?

## 2 The Explanatory (Independent) Variables

The database of schools maintained within the MOE in Lao PDR is comprehensive. In addition to data on students by age and grade, ethnic group, dropout and repetition, it records the number of teachers by gender, years of experience, ethnic group, education and training, whether trained or not, permanently employed or not, and by district and province.<sup>26</sup> It also presents the cross-relationships (often termed interactive variables) such as the number in any school of (say) trained female teachers with 4 years of experience and an 11+3 qualification. The level of detail is such that the full database for secondary schools contains 242 variables. The question which this investigation tried to answer was whether any of the variables in the database, especially those measuring teacher numbers, qualifications, and experience, can account for differences between schools in their performance in the Grade 11 examination. Simple bivariate correlations are not sufficient: what is required is a technique that will identify those factors that retain genuine explanatory value when we simultaneously control for other factors.

The basic procedure was to use a stepwise regression routine<sup>27</sup> to find a way through the very large number of variables, but it is never a good idea to rely totally on the computer to choose variables in a model. Some were omitted because they were not relevant, such as the number of classes in Grades 6 through 10. Some were potentially interesting, but not available in a meaningful form. In an ethnically diverse country, ethnic differences are a sensitive but legitimate issue in educational policy, but as noted earlier terms such as *Laoloom*, *Laooong* and *Laotheung* do not really capture meaningful ethno-linguistic differences. Conversely, additional variables were created by transforming some of the raw data. For example, exam scores and teachers' training may be related, but not in simple linear fashion. Transforming these variables into natural logs tests for a percentage relationship between them. Other transformations allowed for the possibility that (say) the *proportion* of teachers with an 11+3 qualification might have greater explanatory power than the raw number of such teachers in a school. Some potentially useful relationships could not be measured. Despite the wide range of data, it was not possible to link teacher numbers and characteristics directly to the classes they taught. The consequence is that derived variables such as the student-teacher ratio apply to the entire school, not to Grade 11. Similarly, a school might have a large number (or proportion) of teachers with only an 8+3 qualification but limit those teachers to the early grades rather than to teaching in Grade 11. It can be plausibly argued that results in the end-of-school exam are the cumulative outcome of teaching throughout the entire range of secondary grades, but the data make it impossible to supplement this argument with a test of the role of those teaching specifically in Grade 11.

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<sup>26</sup> Not all of this information is contained in the published version of the yearly data, the *Annual Bulletin*.

<sup>27</sup> This is a procedure which uses a variety of algorithms to test all specified variables and retain only those which are statistically significant.

### 3 What Explains Variation in School Performance?

Annex Table summarizes the variety of statistical tests that were carried out. Two results dominate the Table. The first is that despite multiple testing, not one of the estimating equations even came close to being statistically robust. A glance at the Table confirms that it was never possible to achieve an  $R^2$  greater than five to six percent.<sup>28</sup> In plain language this means that Lao secondary schools differ in their Grade 11 performance, but with the data available it has not been possible to account for more than a very small percentage of that variation.

It seemed likely that using a school's average score weighted by the proportion of its students in the top quartile of national scores would provide a good all-round measure of school performance but Annex Table indicates that this hypothesis cannot be supported. In practice it produced no better estimates than merely using the school's average score or the school's proportion of students in the top quartile. Similarly, the use of z-scores rather than raw scores produced no significant improvement.<sup>29</sup> Slightly better results were obtained by excluding those schools whose average score was less than 45, but the improvement in explanatory power was not great.<sup>30</sup> The exact specification of variables can be problematic in regression analysis, but there is no evidence from these trials that a logarithmic (or percentage) relationship is appropriate.<sup>31</sup> A binary logistic regression attempted to distinguish the explanatory characteristics of schools with a score above the mean from those below, but did not produce statistically significant results.

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<sup>28</sup> More formally,  $R^2$  is known as the coefficient of determination. It measures the proportion of total variation in scores accounted for by the variables in the model. In a simple model where we have a dependent variable  $y$  and only one independent variable  $x$ , a close relationship between  $x$  and  $y$  (and a high  $R^2$ ) means that we can do a good job of predicting (or explaining)  $y$  by using the information contributed by  $x$ . If  $x$  contributes no information to the estimation of  $y$  (a low  $R^2$ ) then there is little point in using that information: without any other evidence to help, the best estimate for  $y$  is its mean value. The interpretation of  $R^2$  is exactly the same when there are multiple  $x$ , as in this case. There is no uniquely correct or unambiguously good or bad level of  $R^2$ . Quantitative work in the humanities or social sciences, with all the vagaries of human behaviour, invariably produces lower levels of  $R^2$  than experiments in the natural sciences. It is, however, safe to say that an  $R^2$  in the range of five to six percent indicates that the estimates do a very poor job of explaining variation in exam scores.

<sup>29</sup> Z-scores are a useful device, widely used in statistics, for transforming raw scores into standardized scores by combining the mean and standard deviation. The standard score reveals how many units of the standard deviation a case is above or below the mean.

<sup>30</sup> While excluding students with low scores raises problematic conceptual issues (see footnote 22) no such issues arise in the case of excluding low-scoring schools. However, excluding observations from a sample must be done cautiously, to avoid the possibility of manipulating the sample to achieve the results desired.

<sup>31</sup> Although not reported here, various non-linear relationships were tested, without success.

**Annex Table: Results of Regression Analysis**

Dependent variable	Coefficients included in the equation	Value of coefficients	Significance level of coefficients	Adjusted R <sup>2</sup> (%)
Score	Student-teacher ratio	-0.094	0.019	4.6
	Proportion of female teachers	6.925	0.003	
Weighted score <sup>1</sup>	Student-teacher ratio	-0.348	0.002	4.8
	Proportion of female teachers	15.70	0.018	
Proportion of scores in top quartile <sup>2</sup>	Student-teacher ratio	-0.006	0.003	4.9
	Proportion of female teachers	0.272	0.014	
Score (<45 excluded) <sup>3</sup>	Student-teacher ratio	-0.110	0.309	5.6
	One year experience teaching	0.001	0.045	
Weighted score (<45 excluded) <sup>3</sup>	Student-teacher ratio	-0.432	0.001	6.3
	One year experience teaching	1.323	0.024	
Proportion of scores in top quartile (<45 excluded) <sup>3</sup>	Student-teacher ratio	-0.007	0.000	6.5
	One year experience teaching	0.022	0.022	
Z-Score	Student-teacher ratio	-0.017	0.003	4.6
	Proportion of female teachers	1.224	0.019	
Z-Weighted score	Student-teacher ratio	-0.022	0.002	4.8
	Proportion of female teachers	0.970	0.018	
Z-Proportion of scores in top quartile	Student-teacher ratio	-0.021	0.003	4.9
	Proportion of female teachers	1.009	0.014	
LnScore	Student-teacher ratio	-0.002	0.029	4.6
	Proportion of female teachers	0.147	0.002	
LnWeighted Score	Proportion of female teachers	2.387	0.001	4.4
Logistic regression <sup>4</sup>	Student-teacher ratio	-0.43	0.012	n.a.

- Notes:
1. Weighted score is the school's average score weighted by the proportion of its Grade 11 students who received a score in the top quartile of national results.
  2. Uses the information on school and national scores to calculate the proportion of a school's students who score in the top quartile and uses this proportion as the dependent variable, without incorporating the scores in the variable as in weighted score (Note 1).
  3. All the dependent variables designated as <45 excluded means that all schools whose average score was under 45 were excluded from the sample.
  4. This regression compared schools above and below the national mean score. R<sup>2</sup> are not available for logistic regression. The coefficient for student-teacher ratio was the only entry with a probability level below 0.05, indicating sufficient evidence that the coefficient is not zero. While the coefficient is significant, the odds ratio of 0.96 implies a minimal effect on whether a school scores above the mean level. Measures of association between observed and expected frequencies below 0.25 imply low predictive ability for this model.

The second result which dominates Annex Table is that a wide variety of variables was tested in the stepwise regressions, but most of them produced statistically insignificant results and were therefore excluded from the final equations. Virtually none of the teacher characteristics of interest (their education, training, and experience) was statistically significant. There are suggestions here and there in the results that teachers with only one year of experience and the proportion of female teachers are positively associated with higher exam scores,<sup>32</sup> but only the variable for the student-teacher ratio consistently survived the testing, with a statistically significant negative coefficient. That is to say, a high student-ratio is associated with lower Grade 11 scores.

There is no surprise in the finding that large numbers of students per teacher in a secondary school have a negative impact on Grade 11 exam scores. Class size is usually a better measure in secondary schools, but as noted earlier, the class size data are not reliable, and the student-teacher ratio is no doubt capturing the fact that classes in Lao secondary schools are simply too large for effective teaching. Those schools with lower ratios have better Grade 11 scores. In none of the equations was the effect large, but as Annex Table indicates the coefficient was always statistically significant.

It is an understatement to note that the number and training of secondary teachers is a matter of great policy concern in Lao PDR. With almost half (46.5 percent) of all secondary teachers not meeting the formal minimum qualification, it is with equal understatement disappointing that no robust statistical link can be established between school and teacher characteristics and academic achievement.

Generally, one explanation for a small value of  $R^2$  is that there are insufficient variables in the model. On this line of argument, the addition of other variables related to exam scores would account for a significant portion of the remaining 94 to 95 percent of variation. This raises the question of exactly which additional variables might be included. Exam scores are the outcome of a complex process involving factors both at home and in the school. As noted earlier, home and family characteristics could not be included in this analysis, and it is a logically consistent argument to suggest that a reason for the poor statistical findings when measuring school-only characteristics is that good performance in the Lao PDR Grade 11 exam may be mostly the outcome of unmeasured family and student factors, with school factors having virtually no impact.

This hypothesis cannot be ruled out, but neither can it be directly tested given the existing data. Acceptance of this argument, given the low  $R^2$  of Annex Table, would mean

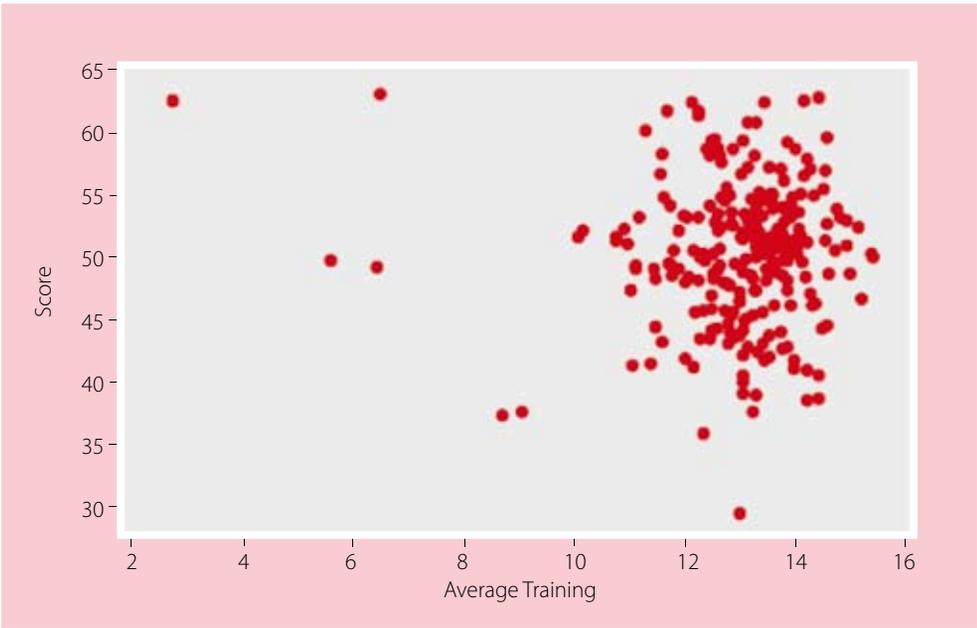
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<sup>32</sup> The finding that the least experienced teachers have a positive association with exam scores may be because the newest teachers are the best qualified and are most up to date with subject knowledge. It is less clear why a higher proportion of female teachers also has a positive association with scores. The explanation is not purely quantitative, since men and women do not differ significantly in their qualifications or experience. Perhaps women are the better teachers, or perhaps there is a better culture of learning and behaviour in schools with a higher proportion of females on the staff.

that differences in the type of school or the quality of the teachers do not matter much in explaining variation in student performance. While there is obviously variation in Grade 11 results between schools, academic performance is determined by the intellectual and socio-economic characteristics of the students and hardly by the characteristics of the schools. On this line of argument, it matters little where students go to secondary school in Lao PDR: what is important is the attributes they bring to school with them.

A second possibility lies in the nature of statistical testing of this sort. It is important to note that the inability of the statistical tests to discern the role of teachers with more or less education and training does not mean that these things have no effect on overall Grade 11 performance. It means that they do not explain *variation* in performance between schools. A feature of Annex Figure 1 is the relatively narrow range of scores. This range, or variation, is further narrowed when the student scores are averaged by school. Annex Figure 2 displays the fact that neither is there much variation in the average training of teachers, with two-thirds of teachers falling within the quite narrow range of 11.5-14.5 years of education and training. It is also noticeable that some high-scoring schools have teachers at the bottom end of average training, and some low-scoring schools have teachers near the top end of the range. Whatever else explains variation in Grade 11 scores; it is not a variation in the average duration of education and training of the teachers.

**Annex Figure 2: Grade 11 Scores and Average Duration of Teachers' Education and Training**



A third explanation is that the Grade 11 exams may not be well-constructed. As noted earlier, poorly-designed examinations may not measure academic achievements in a convincing way. There are well-established techniques for testing the usefulness of exam questions. *Item analysis* is the standard tool for evaluating whether an examination is well designed. The main elements of item analysis are a *difficulty index* (which measures how easy or difficult students found a particular question or item) and the unfortunately-named *discrimination index* (which measures the ability of a particular item to distinguish between those who scored highly on the total test and those who scored badly). There is no evidence that detailed item analysis has ever been carried out for the Grade 11 exam, so it is possible that the exam is an imperfect test of cognitive skills to the point where relationships between outcomes in the exam and school inputs into the learning process cannot be measured with any reliability. Given the importance of the Grade 11 exams as a high-stakes, end-of-school pass-or-fail certification, a review and possible overhaul of the method of testing and assessment could pay large dividends for secondary schooling in Lao PDR.

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