

PN-ANU-886

ASIA/TR

47189

DETAILED ANALYSIS OF THE INDONESIAN EDUCATION SECTOR

AGENCY FOR INTERNATIONAL DEVELOPMENT

DIVISION OF EDUCATION AND HUMAN RESOURCES

JAKARTA

OCTOBER 1982

Foreword

The purpose of this report is to present as comprehensive a picture as possible of Indonesian education. A great many of the data were obtained from publications of the Department of Education and Culture (or "Ministry of Education") or documents commissioned by the Department. Other facts as well as interpretive commentary about them were obtained from reports of the Asian Development Bank, the World Bank, and consultants and experts employed by the Banks and other assistance agencies, including AID.

The members of the staff of the Division of Education and Training of USAID/Indonesia (Robert Schmeding, Clayton Seeley, James M. Seymour and Thomas Ward) prepared the analysis.

TABLE OF CONTENTS

<u>Topic</u>	<u>Page</u>
<u>Primary Education</u>	1
Overview	1
Educational Quality	4
Internal Efficiency	6
Equity	7
Teacher Training	11
Alternatives for Compulsory Education	14
<u>Secondary Education</u>	16
Overview	16
Enrollment Projections	19
Organization and Operations	20
Structural Problems	21
Inadequate Resources	23
Human Resources: Teachers	25
Student Performance and Quality	26
Finance for Education	27
External Assistance	29
Forecasting Financial Demands	29
Routine Recurrunt Expenditure	29
Development Recurrent Expenditure	31
Capital Expenditures	31
Education's Share in Total Government	
Routine Expenditure	33
Education's Share in Total Government	
Development Expenditure	33
Total Government Education Expenditure in GOP	35
Indonesia's Human Resources Requirements	36
The Female-Male Imbalance	40
The Problem of External Efficiency of Secondary Education	41
Demand and Supply	41
Educated Unemployed	42
Importance of Vocational Education	44

<u>Higher Education</u>	45
Overview	46
Access	49
Productivity	52
GOI Efforts	55
AID Assistance	55
Administration and Staffing	56
GOI Efforts.	57
AID Assistance	60
Private Institutions of Higher Education	61
APPENDIX	63
Indonesian Educational Structure	64
Ladder Structure of School Types and the Labor Force Pyramid	65
Post-Secondary/Tertiary Educational Institutions in Departments Other than MOE	66
Public Institutions of Higher Learning: Number of Academic Staff According to Degree	67

I. Primary Education

Overview: Schools, Students and Teachers

Primary education is officially a six-year course beginning at the age of 7. Where possible, the medium of instruction is Bahasa Indonesia, but in classes I and II outside the cities, the local language is frequently used. A new curriculum was introduced in 1975. It is relatively standardized, with the core subjects being reading and writing in Bahasa Indonesia, mathematics, social studies, science and civics.

There are both government and private schools at the primary level. Ninety per cent of the schools are public and they have 90 per cent of the teachers and students.

<u>Schools</u>			<u>Students (000)</u>			<u>Teachers</u>		
Public	Private	Total	Public	Private	Total	Public	Private	Total
87,288 (90%)	10,660 (10%)	97,948 (100%)	18,939 (90%)	2,226 (10%)	21,166 (100%)	550,822 (90%)	68,950 (10%)	619,772 (100%)

Primary schools, as institutions, are under the Governor of each province. He provides the salaries of teachers, budgeted through the Ministry of Home Affairs, and appoints teachers through his own office of education, upon advice of the provincial office of the MOE. On administrative and material matters, such as condition of buildings and equipment, school statistics, and finance, a school principal is responsible to the head of the Governor's office of education. But on professional matters the principal's responsibility is to the MOE's provincial office. The head of this office is directly accountable to the Minister of Education, but his normal working relations are with the senior members of the MOE.

The Minister of Education formulates educational objectives and policies, and under his authority, the MOE establishes standards and prepares the curriculum for all the primary schools in Indonesia. It issues or approves textbooks, inspects the schools, trains teachers, accredits schools and exercises general professional supervision over primary teachers.

Most of the private schools are either Christian missionary schools or Yayasan (institutes) controlled by legally constituted foundations. The amount of government aid given to private schools depends upon how willing they are to conform to government school standards in such things as curriculum and textbooks. Of the private schools, the subsidized schools conform most closely, and normally receive a sum equivalent to teachers' salaries at government rates. An aided school gets some assistance with salaries. Fully private schools get no government aid, but do follow the rules concerning teaching in Bahasa Indonesia.

Outside the primary school program operated by the Department of Education and Culture (MOE) is another, operated by the Ministry of Religion (AGAMA). There are about 15,000 schools in it, most of them being Islamic (Madrasah) under the Ministry of Religion. In effect they comprise a separate and parallel program. The time given to religious studies varies greatly in the Madrasah, some of which cater to students who will probably devote their lives to religion. Others differ from the Government schools only in their control and in a somewhat greater emphasis they give to religious subjects in the curriculum. About 1,500 of the religious schools are privately run (apart from AGAMA) and are specialized in nature.

Thus there are two systems of government schools with the great majority operated under the dual administration of the MOE and the provincial Governors, and a minority operated by AGAMA. Within each system there are public and private schools. Given the fact that the largest number of schools are under the professional control of the MOE, this analysis will from this point concentrate on these schools.

The teacher-pupil ratio is an average of 1:32 but shows a marked decline as one moves from grade 1 to 6:

	Grades					
	1	2	3	4	5	6
Teacher-pupil ratio	1:38	1:34	1:33	1:30	1:28	1:25

Primary education is a priority area within the education sector. While primary education was allocated only 10 per cent of the total education budget in Repelita I (1969 - 73), it has received almost 50 per cent in Repelita II and III. As a result, reported enrollments have jumped from 13,314,000 or 76 per cent of the primary school age population in 1974 to 21,165,000 or 94 per cent in 1980. An outstanding feature among the MOE schools during this period has been the widespread construction of primary schools under the INPRES program (Instructions of the President), or from the Special Development Budget for Constructing Rural Social Services. This can partly be seen in the following:

	Schools			Students (000)		
	SO*	INPRES	TOTAL	SO	INPRES	TOTAL
1977	67,973	15,566	83,593	14,912	2,353	17,265
1980	67,810	30,138	97,948	15,857	5,309	21,166

* Sekolah Dasar or conventional primary school

No doubt primary education will continue to be a priority in Repelita IV. This is because the Ministry of Education and Culture will probably try to realize the goal of universal primary education. The Minister pledged to do this back in 1978 when he launched the policy of Kewajiban Belajar ("Compulsory Education").

The average age of teachers is 30 years, and their average teaching service is eight years. More than 50 per cent in the teacher sample of the National Assessment came from homes of lower socio-economic status (farmer or laborer). Only 15 per cent had fathers with more than a basic education themselves. The socio-economic level of primary teachers has dropped substantially since independence, and with it, the prestige of the occupation.

Teachers with long years of experience are paid higher salaries, and generally they have higher achieving pupils. The exception to this is the teachers with over 20 years of experience. This is because a large number of Indonesian primary school teachers in the 1950's went through an emergency two-year course after completing only primary school, and they are not as well trained as the general body of teachers.

Two-thirds of primary teachers are men. However, women have higher achieving pupils than do men. The National Assessment* found this to be the case in all subjects, although less so in mathematics, and there is a difference of 9 points in the total achievement means:

Achievement Scores of Pupils by Sex by Teacher

<u>Subject</u>	<u>Men</u> (10,190 pupils)	<u>Women</u> (1,959 pupils)
Science	26.98	28.54
Mathematics	32.61	33.54
Social Studies	34.28	37.12
Bahasa Indonesia	34.91	38.33
Total	128.78	137.53

(For this and subsequent tables, total means refer to the subject aggregate of means. The total possible mean is 250.)

In this grade 6 sample, 84 per cent were men, while in all grades 67 per cent are men, indicating more women teachers are employed at lower levels of the primary school. A closer study of the characteristics of the women teachers showed that only a slightly larger percentage of women teachers (32%) than men (27%) were working in city schools, and that the women were no more experienced than the men.

*To date, the most rigorously formulated and widely administered test of educational quality was conducted during the National Assessment of 1975. Carefully devised questions in science, mathematics, social studies and Bahasa Indonesia were given to 14,000 students in grade 6 throughout Indonesia. The Assessment also gathered data on the schools, teachers, and student background.

The Problem of Educational Quality

Perhaps the greatest problem confronting Indonesian primary education is that of quality. Specifically this means the degree to which students effectively learn the prescribed curriculum, regardless of its content. It is a criterion of effectiveness and refers to the relationships between outputs (student achievement), and objectives (immediate and long-term instructional goals).

The National Assessment, mentioned above, surveyed 14,000 students in grade 6 on the subjects of Bahasa Indonesia, mathematics, science and social studies. The mean scores failed to reach one-half the maximum possible score for each subject. The lowest scores were in Bahasa Indonesia and mathematics. In Bahasa Indonesia there appeared widespread reading difficulties, and mathematics students could not apply skills to new situations nor solve problems, although they could provide correct facts and perform elementary skills. The scores were higher in Java and Bali than in the Outer Islands, particularly Kalimantan, Sulawesi and the Eastern Islands.

Whether or not student achievement has been rising, declining or maintaining the same level on a national basis is impossible to tell because there have been no longitudinal studies of this type. In 1970, however, 65 per cent of the primary grade 6 enrollment passed the final examination, suggesting that possibly the overall achievement level has slightly declined when this figure is compared to those of the National Assessment of 1975. Given the accumulated evidence of testing already done by the Research and Development Agency (BP3K) and the Directorate of Primary Education, which tends to corroborate the National Assessment findings, there is little reason to doubt that educational quality in the primary schools needs improvement.

What is more perplexing is to account for this low quality as measured by student achievement. The National Assessment attempted to determine which in-school and out-of-school variables contribute the most to student achievement. Following the pattern of production-function studies which use the technique of multiple regression analysis, this study analyzed over 30 variables, and the most-important ones explained 66 per cent of the variance in student achievement. Important out-of-school or background variables were father's occupation, the number of books found in the home, and the economic status of the family. Important school variables were school, class size (students achieve higher in larger classes and schools), classroom facilities, and kind of school (students achieve higher in private than in public schools).

The two major variables which affected quality the most are more general in nature. They are the rural or urban location of the school, and an index called "classroom climate" (teachers' expectations of students and the mean achievement score of each pupil's classmates). Students from urban schools (30 per cent of the sample) perform better than those from rural schools (70 per cent). The single largest influence is classroom climate. The study argued that where classroom

climate was high, teachers had better teaching skills and more effective relationships with their pupils. This produces a positive, reinforcing classroom environment.

Interestingly, the availability of textbooks was only slightly related to achievement although further analysis suggested that probably the issue was not whether textbooks were or were not available, but how the teachers used them if available. If teachers did not use them properly, students who had them would probably achieve no better than students who did not have them. Also, students from larger families perform distinctively better than those from smaller families. Whatever the explanation for this unusual trend, it is likely to be something within the Indonesian culture which is critical, for when compared to studies conducted elsewhere in the world the finding is usually the reverse.

What are the policy implications of this study? Perhaps the main one is that research is needed on the teaching-learning process, to identify and analyze more precisely the critical behaviors, interactions and attitudes involved in "classroom climate." This could indicate improvements needed in pre-service and in-service teacher training, field supervision, classroom facilities, textbooks, (especially how to use them), and testing.

There have been a number of attempts in Indonesia, some supported by the World Bank, to define more clearly the issues related to educational quality and to improve it. The textbook and the teacher training projects have addressed the matter head-on by strengthening Indonesia's capacity to produce and distribute school books and to upgrade teacher education. In addition, UNESCO, UNICEF, AIO and the International Development Research Council (IDRC) have all assisted in research studies and field projects to improve the quality of primary and basic nonformal education. The World Bank has assisted with efforts to improve literacy by nonformal education means in the PENMAS project, which includes both increasing access to and improving the quality of basic education programs.

Against this backdrop of low educational quality, there have been 10 years of massive primary school expansion. In addition, the Ministry has been considering changing the 6-3-3 system to a 5-3-4 system. Theoretically, this shortens basic education from 6 to 5 years; actually, it lengthens primary education from 6 to 8 years, since there will be no examination to hamper a child's movement from first through eighth grade. This appears to be one more aspect of educational expansion.

There probably is no inherent conflict between quantity and quality. Malaysia has virtually achieved universal primary education without any significant decline in quality. Can Indonesia do it? It certainly could not in the late 60's and early 70's. Since then, the rise in oil prices and the surprisingly extensive and vigorous programs of school construction (INPRES), textbooks, curriculum development and teacher training (with large-scale World Bank assistance) suggest that expansion and improvement can occur simultaneously.

Nevertheless there are a few caveats. First, oil prices may stabilize, even fall, as the current world glut of oil suggests. The oil revenues may level off or diminish, thus limiting educational funds. Second, the massive programs such as the INPRES primary school program for a country the size of Indonesia take time to establish themselves, for they ultimately involve large-scale structural and attitudinal changes throughout the system. Third, the problems of educational quality in Indonesia are too deep and widespread to be remedied in a few years. Fourth, it would be advisable to evaluate the steps taken during the past four years to expand and improve primary education before the country undertakes more expansion.

It is expected that under Repelita IV (1984-89) Indonesia will place greater emphasis on improving the quality of primary school education. While the Ministry no doubt will press for completion of universal primary education, the overall low level of achievement in primary schools, and the great disparities between regions as well as between urban and rural schools are constant reminders to the government that improving quality should be a priority. A number of experiments in this regard, particularly conducted by UNICEF and USAID (See PAMONG below), are being assessed and prepared for dissemination, some on a regional and others on a national basis.

The Problem of Internal Efficiency

By efficiency is meant the relationship between inputs and outputs within the primary school system. This is usually expressed in terms of costs. For example, if more students graduate from primary school at no increase in costs, the system's efficiency has improved. Three measures of internal efficiency are dropouts, repeaters, and attendance, and changes in these influence changes in the cost per student. Dropping out of primary school is a severe problem. A cross-sectional study of primary enrollment figures shows that 13 per cent of entrants drop out before reaching grade 3; and before grade 6 approximately 50-60 per cent leave. Even worse, of those students who do reach grade 6, only 60 per cent graduate. Repeating grades is less serious, with an average of 15 per cent of students repeating the same grade. Poor attendance is also a problem, with the highest rates of absenteeism occurring in the Outer Islands, in remote schools, and during harvest time. Absenteeism usually precedes dropping out; as students fall behind in class they simply leave school altogether. Given that teacher salaries are low, teacher attendance is a problem as well, because teachers have to maintain two or three income-producing activities.

Through its Research and Development Agency (BP3K), the Ministry of Education has conducted studies of the dropout problem. With the exception of the National Assessment Study, however, these studies have been limited in scope. This is because the problem itself demands a large and sophisticated research effort in a country as big and varied as Indonesia. BP3K simply has not been able to concentrate sufficiently on this effort because it has to address more pressing problems.

The National Assessment Study found that the principal causes of dropping out were economic. Virtually all primary school dropouts were from families at the lowest socio-economic level. One survey in the Assessment attributed dropping out to poverty of parent (55 per cent), lack of parental understanding of the value of education (25 per cent), and to young marriages (10 per cent). Contrary to conventional wisdom, educational factors such as low achievement, poor teaching and boredom accounted little for dropping out (15 per cent). Further, direct costs are high as parents must bear the costs of books, transportation, lunches, uniforms and school fees, (until the latter were supposedly abolished in 1978). Clearly poor parents find it difficult to sustain these costs for six years, and all the more so with additional children of school age in the family. This difficulty is further compounded when the opportunity cost of keeping a child in school is considered: the value of the child's labor in farming or domestic chores can be substantial.

One study found that parents and children were quite realistic when they compared the option of finishing six years of school or dropping out after four. It found that parents encouraged their children to obtain only enough literacy and numeracy skills so that they "would not be cheated" in the market-place. It then surveyed grade 4 dropouts and grade 6 students and found that the former were comparable in skills with the latter. Apparently the parents of the dropouts withdrew them because they felt the two extra years of schooling were not worth the effort, and felt their children could cope with farming as well as with buying, selling and dealing with urban phenomena. Further findings of this kind could shed additional light on the trade-offs between improvement and expansion.

The Problem of Equity

Equity refers to at least two things in education. The first is access to schooling or its equivalent form of out-of-school education. In the simplest sense this means the availability of a primary school for every child in Indonesia. The second is the equality of opportunity to achieve in school according to universally accepted, and standardized, criteria. In the purest sense this means that all students have the same set of conditioning factors which influence, positively or negatively, the students' opportunity to achieve. These factors lie within the school, such as differences in facilities or quality of instruction; or lie in the home or community, such as differences in family economic status, parents' education, or real relationships between schooling and the world of work. Access is more easily obtained by increasing the number of schools. Equality of opportunity is far more difficult, if not impossible to obtain, because in many ways the schools reflect, even perpetuate, the inequalities in society.

Primary education in Indonesia suffers from inequities, although they lie more with the inequality of opportunity to achieve in school than with unequal access to schooling. As will be noted below, universal access to schooling has been a dominant theme in Indonesian education ever since independence and is embedded in the national philosophy of Pancasila. It has been noted above that the INPRES program has increased

the number of schools dramatically - from 67,973 in 1977 to 97,948 in 1980; and under Repelita IV it will probably attain the goal of universal access to primary schooling or its out-of-school equivalent.

Regarding the equality of opportunity to achieve in school, there has been success in two areas: language and sex equality. In some multilingual countries, such as Malaysia, intense conflicts arise over the medium of instruction. Indonesia is in a happier position because there is a national consensus that Bahasa Indonesia should be the instructional medium.

In theory, at least, Bahasa Indonesia gives every student after grade 3 a chance to achieve through a common medium of instruction. However, for most students Bahasa Indonesia is their second language, and those in the urban areas or in Java and Bali have more opportunities to use it than those in rural areas or in most of the Outer Islands. Therefore, one would expect that students speaking Bahasa Indonesia in their homes and who live in urban areas would use it better in school than those who do not and live in rural areas.

The following figures collected during the National Assessment compare achievement scores with the reported use of Bahasa Indonesia at home by the pupils:

Frequency of Usage of Bahasa Indonesia at Home

	<u>Most of the time</u>	<u>Often</u>	<u>Occasionally</u>	<u>Not at all</u>	<u>Total</u>
<u>No. of Pupils</u>	2,094	2,412	4,884	2,220	11,610
<u>Science</u>	27.25	27.63	25.18	27.08	27.04
<u>Mathematics</u>	30.58	32.73	32.13	31.04	31.52
<u>Social Studies</u>	37.00	36.53	37.23	33.86	36.66
<u>Bahasa Indonesia</u>	39.83	39.09	35.68	36.98	37.39
<u>Total Achievement</u>	134.66	135.98	130.82	128.96	132.61

Surprisingly, there is no consistent difference between the four usage-categories of pupils in Science and Mathematics. In social studies the non-speakers of the national language perform noticeably lower, while the two groups who use the language least show slightly lower scores in Bahasa Indonesia. The most interesting aspect, however, is that the regular use of Bahasa Indonesia at home confers little scholastic advantage on the grade 6 child. Apparently, by the time he has had at least 4 years of the language as the medium of instruction, he has overcome most of the handicap which the change of language entailed. This tends to substantiate that Bahasa Indonesia as a medium of instruction provides an equitable means for students to achieve (and compete fairly) in schools.

Also, it can be said that the primary school serves both sexes equitably. This can be seen by the following:

Achievement by Sex and Subject

	<u>Boys (7950)</u>	<u>Girls (5932)</u>	<u>Total (13872)</u>
Science	27.52	26.53	27.04
Mathematics	32.52	32.73	32.61
Social Studies	34.96	34.36	34.70
Bahasa Indonesia	35.36	35.94	35.61
Total	130.36	129.56	138.96

These figures show an extraordinary degree of uniformity between the sexes, not only in total achievement, but in every subject tested. One qualification must be made, however; as only 43 per cent of the sample are girls, a larger proportion of them probably dropped out of school before Grade 6. If academic capability was an important reason for dropping out, then an analysis of the younger age group would show relatively higher means for boys than for girls. Unfortunately this was not done.

There are, however, significant inequities in Indonesian primary schools, and in general terms these are in two areas: regional inequities (e.g., Java vs. East Indonesia) and rural-urban inequities.

The regional inequities are significant with schools in Jakarta, Southern Sumatra and West Java having the highest achievement scores, while those in Sulawesi, East Indonesia, and Kalimantan having the lowest scores. This can be seen from the following:

Total Achievement Scores for Ten Regions

<u>Region</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>No. of Pupils</u>	<u>Percentage Sample</u>
1. Jakarta	156	30	883	7
2. South Sumatra	139	29	699	5
3. West Java	134	31	2,427	18
4. North Sumatra	130	34	1,340	10
5. East Java	128	33	2,315	17
6. Central Sumatra	126	33	864	6
7. Central Java	125	29	2,447	18
8. East Indonesia	116	32	845	6
9. Sulawesi	115	29	1,028	8
10. Kalimantan	113	29	557	4
Indonesia	129	31	13,405	

Clearly as one moves away from Jakarta, one finds a general decline in educational achievement levels. Regional variations in quality of education are considerable in Indonesia.

The case is also similar regarding per pupil expenditures. The seven lowest provinces in grade 6 achievement had medium per pupil-year expenditures of Rp 1,900 while the top 5 provinces in achievement had Rp 2,200. At the very extremes, the difference is even more striking:

<u>Rp 3,000 per pupil per year</u>	<u>Rp 1,500 per pupil per year</u>
Jakarta	West Kalimantan
West Sumatra	Central Sulawesi
North Sulawesi	Riau

The other major inequity is between urban schools and rural schools, as measured by a few key variables. Indonesia is still predominantly an agricultural country, and it is not surprising that in the representative sample of students in the National Assessment, 72 per cent were classified by their headmasters as being rural. The important questions asked in the Assessment were to what extent the rural children are handicapped in their education as a result of their location, and how much of this handicap is attributable to the schools, rather than the home background. The following indicates that the urban-rural difference is significant:

Total Achievement Scores for Urban and Rural Areas

	<u>Boys</u>		<u>Girls</u>		<u>Total</u>	
	<u>N</u>	<u>Median</u>	<u>N</u>	<u>Median</u>	<u>N</u>	<u>Median</u>
Urban Areas	1,800	143	1,552	145	3,352	144
Rural Areas	5,163	121	3,602	119	8,765	120
Indonesia	6,963	129	5,154	129	12,117	129

Since urban-rural differences pervade the whole analysis of pupil achievement, key variables which correlate significantly with urban-rural differences were identified to help pinpoint these differences.

The first variable is economic status of the home. This is a composite variable made up of responses as to whether the child lives in homes with electricity, radio, TV, car or motorbike, bicycle and regular newspapers. There is a strong relationship between economic status and children's achievement with children from homes with all these facilities (high status) achieving a mean of 150, while children from homes with none of these facilities scoring only 119.

The second variable was father's occupation. Again, children whose fathers had professional or armed forces status scored a mean of 140, while those whose fathers worked as unskilled laborers or farmers scored a mean of 122.

A third was the degree to which the child had books in the home. Children from families with 10 or more books scored a mean of 135, while those with no books in the home scored a mean of 112.

A fourth was a school-related variable and referred to the public or private status of the school. As noted in the overview section, most private schools are either Christian missionary schools or institutions controlled by legally constituted foundations. The former have a good reputation for providing students with a western-oriented education, and in the sample, 83 per cent were located in the town or city. The following indicates the significant difference in mean achievement by subject between the two types of schools:

	Public Schools (90% of sample)	Private School (10% of sample)
Science	26.97	29.89
Mathematics	32.28	38.46
Social Studies	34.28	41.64
Bahasa Indonesia	34.28	41.64
Total	127.81	151.63

Finally, pupils from large classes and large schools perform significantly better than those from small classes and schools. Large classes and schools are found mostly in cities whereas smaller ones are in rural areas. The larger sizes serve as composite variables for a range of other factors such as school facilities, better trained teachers, and so forth, which continued analysis revealed as being highly related to achievement.

Without complicating the discussion any further in a technical way, these five home and school variables were the strongest as a group among the other 30 variables in predicting student achievement.

Participation in equal educational programs is difficult, if not impossible to assure, because the schools themselves are embedded in society and reflect its inequities. This is clearly the case regarding inequities between regions (e.g., Java vs Kalimantan) and between urban and rural areas. Moreover, there is every indication that the more remote areas have the greatest needs as measured by low student achievement, poor facilities, untrained teachers and low per-pupil expenditures. And these areas receive the least assistance. One policy question, then, is to what extent the government is prepared to increase significantly financial assistance to schools in the more remote and rural regions, and how much this increase will diminish financial assistance in other areas, particularly in the improvement of instruction.

The Problem of Teacher Training

Just as student achievement is low in Indonesia, so is the standard of teaching. This is mainly because teachers teach as they were taught. Emphasis is placed upon routine skills, writing, arithmetic and on rote

memorization of a limited range of facts. Teachers rarely encourage students to ask questions, and there is little in the average classroom to encourage students to use their imagination, to raise problems on their own, or to seek solutions to non-routine problems.

Theoretically, the teacher-training institutions for primary schools (SPG's) should reform and enrich the educational perspective of trainees, but they do not. There are over 200 public and 400 private institutions with a total enrolment of 225,000, and training is three years long.

Youngsters completing the junior secondary school may elect to enroll in the SPG instead of the STM (senior technical secondary school) or the SMA (senior general secondary school). The SPG training curriculum is about equally divided between subject matter on the one hand and educational studies, teaching methods, and practice teaching on the other. It appears that the more academically proficient students avoid the SPG and stay in the SMA channel, which leads upward to the university. Students who take the SPG alternative tend to come from poorer families.

The SPG's are intellectually isolated and lacking in overall leadership. Consequently they perpetuate the limited and narrowly focused educational environment which the trainees experienced as primary and junior secondary school students. These same trainees complete the cycle when they enter the classroom as primary school teachers. While members of the staff are qualified, they emphasize the teaching of subject matter, not methods, because many have never taught in primary schools. Consequently, they do not have first-hand knowledge of the conditions under which trainees will work. The SPG's are limited in other ways. Output of training schools is insufficient to meet demand. Facilities in most SPG's are inadequate, especially laboratories, workshops, and practice teaching. Most important, the commitment of trainees to become teachers is questionable. Because many trainees are unable to enter the preferred senior general secondary school, some enroll in the SPG in hopes of getting into higher education programs later. Also, salaries are low, (in fact, salaries of Indonesian teachers are the lowest in East Asia); they provide little incentive for teachers to work diligently, to improve themselves, and to be committed professionals. They are forced to "moonlight" in one or two other jobs. As a result, trainees may see teaching as only a short-term activity until something better arises.

The MOE recognizes the limitations of the SPG's and has taken steps with substantial World Bank assistance, in staff development and materials production and construction, to strengthen teachers through in-service training. There are three types: refresher courses designed to improve the capacity of school staff by providing information and training in line with recent developments in curricula, learning materials and methodology; upgrading programs designed to help unqualified teachers (about 30 per cent of the teacher force) to be certified; and promotion courses to advance qualified teachers in grade. These courses are given by various agencies within the MOE such as the Directorate General for Primary and Secondary Education and training

units within BP3K. While extending this training to thousands of teachers a year, it is rarely adapted to local needs; teachers must travel to regional or national centers; and in-service training does not always relate to pre-service training.

While the SPG's in some ways are appropriate agencies to conduct in-service teacher training, they do little in this regard. They are isolated from schools and do not conduct studies on teachers and students or work with administrators and supervisors. In fact, SPG staff do not visit schools, and teachers in the field tend not to look to them for support and leadership.

The MOE has considered other steps to strengthen the SPG's, such as moving primary teacher pre-service training from grades 10-12 to a two-year post-secondary program. The SPG's would receive their trainees after they had completed regular academic secondary school. Thus, the primary school teacher-trainee would be academically more qualified, having completed secondary school; the SPG could spend less time on subject-matter teaching and more time on pedagogical training. Moreover, entrants would likely be more mature and stable and better educated individuals; hence they are likely to be more effective teachers.

The National Assessment of grade 6 shed some light on this question. That is, do pupils of teachers with more education and higher training achieve better than pupils of teachers with less education and lower training? The Assessment included mostly SPG teachers (71 per cent) in its sample of 620 teachers, but there were small numbers of teachers with different levels of education and training. They were:

- 3 per cent were graduates of junior high school with no training (SLTP).

- 10 per cent were graduates of normal schools providing 4 years of training for those who had only a primary school education (SGB). These schools no longer exist.

- 6 per cent were graduates of senior high school with a one year teacher training course (PGSLP)

- 9 per cent were graduates of senior high school with partial or complete training from a secondary school training institute (IKIP).

The achievement means of their pupils were:

<u>Teachers</u>	<u>Pupil Means</u>
IKIP Teachers (9 per cent)	140
PGSLP Teachers (6 per cent)	136
SPG Teachers (71 per cent)	130
SGB Teachers (10 per cent)	126
SLTP Teachers (4 per cent)	123

The pupils of untrained teachers and the lowest level of education had the lowest mean achievement scores, while the scores were successively higher for teachers with more education and training.

In interpreting the relationship of teacher education and training with student achievement, it is important to recall that a selection process may be at work. Perhaps teachers with more education and better training have more seniority, and are given better classes to teach. Nevertheless, there is some reassurance in these findings in that the better educated and trained teacher has higher achieving pupils. If there were no positive relationship, or if the reverse pattern were found, then the MOE would have to reconsider the proposal of moving teacher pre-services training from grades 10-12 to a two year post-secondary program.

This proposal entails a number of actions. Upper secondary schools would have to be expanded to enable candidates to continue secondary schooling for two more years. The SPG's would have to revise their curriculum. There would be increases in capital costs to cover the secondary school expansion, and increases in recurrent costs to cover the two additional years of pre-service education (14 instead of the current 12). Also, higher starting salaries would likely be awarded to the better trained graduates.

The Problem of Alternatives for Implementing Compulsory Education

As noted above, the GOI is committed to implementing compulsory education. This is likely to play a priority role in primary education under Repelita IV. This goal is certainly nothing new, and attempts to attain it began soon after Independence during the Sukarno era. The main vehicle for attaining this goal has been the primary school. Whether the primary school, functionally speaking, has been the best means, has been questioned recently.

As in most developing countries the functions of the Indonesian primary school are two:

- to provide a minimum first-level, or basic education (literacy, numeracy and awareness of one's natural, biological and physical environment) as a preparation for life for everyone (socialization).
- to prepare the more capable (30 per cent of entrants?) for further education (selection).

And like most developing countries, primary schools in Indonesia have emphasized the sorting and selection function at the great expense of the socializing function. Concomitantly, there has been low internal efficiency and educational quality, as defined above.

In the late 60's the MOE tried to come to grips with this over-emphasis on the selection function by proposing a restructuring of the primary - secondary school system, as noted above, from a 6-3-3 system to an 8-4 system. One aim was to make it easier for everyone to attain a full primary education without having the hindrance of the "primary six" examination, yet still allowing for the more capable to continue on to secondary school if they passed a "primary eight" exam. This proposal was never adopted.

In the 70's the GOI tried to provide education for some youngsters through non-formal means (although at the time the goal of compulsory education was not stated as such). Experiments with IORC under the PAMONG project attempted to educate learners both in the primary school and illiterates, dropouts, or non-schoolers through learning centers that were supported by and tied to the school. Ages of the students at learning centers ranged from 8-20 years. Similarly, the World Bank assisted the PENMAS (community education) project which focused exclusively on out-of-school learners in a much larger way than PAMONG and to a wider range of learners (ages 13-30). A third type, sponsored by USAID, is "Small Schools," really a variant of PAMONG. UNICEF has also participated in the Small Schools program. The Small Schools project is for sparsely settled communities spread over large areas (Kalimantan, Sulawesi) using the instructional techniques of PAMONG. This enables a teacher to teach two or three classes, theoretically, without detracting from the learning of students.

Currently, then, the GOI is still committed to implementing compulsory education which includes school-age and older children through formal schooling and out-of-school means. Thus, the original goal persists: to make co-equal the socializing and selection functions of education, only with more means at the GOI's disposal than in 1950. These are: regular primary schools, PAMONG primary schools and learning posts, Small Schools, PENMAS out-of-school learning programs, and special schools for the handicapped.

However, there are problems in coordinating these efforts. A case in point is the relationship between the PAMONG primary school program and the PENMAS out-of-school literacy program. The first program focuses upon both students and dropouts through primary schools and satellite learning centers; the second focuses exclusively on dropouts through nonformal education and training activities. The PAMONG enables dropouts to re-enter the school system and if they pass the final exam, they may be able to continue their education in secondary school. The PENMAS program purportedly does the same, but the curriculum and final exam are different. More important, dropouts perceive the PENMAS program as easier and more appropriate to their needs; hence many have switched from studying in the PAMONG program to studying in the PENMAS programs. Both programs operate in the same area and compete for the same students. So, not only is there a duplication of effort, but jurisdictional questions arise regarding the operation of the two programs.

In other cases there are inconsistencies. In the PAMONG experimental and developmental period the focus was upon both in-school and out-of-school learners; the means were self-instructional and group-learning modules in addition to standard texts; and the costs were to be reduced by emphasizing self-instructional learning rather than teacher-centered classrooms, thus reducing the number of trained teachers necessary. Now that PAMONG is ready for dissemination throughout Central and Eastern Java and Bali, the Directorate of Primary Education appears to want to focus on out-of-school learners only, and leave in-school learners to the regular school.

II. Secondary Education

Overview: Schools, Students and Teachers

As the tabular summary indicates, Indonesian public and private secondary education under the Ministry of Education is divided into two age-group levels of junior (grades 7-9) and senior (grades 10-12); and into numerous streams (four at the junior level; six at the senior level).

The Sekolah Swasta, or private secondary programs, at the SLTP level operate 64 per cent of the schools, enroll 43 per cent of the students, and employ 52 per cent of the teachers. At the SLTA level, the figures are 68 per cent (schools), 48 per cent (students), and 59 per cent (teachers). While these schools are considered private, they are government supported, and come under the control of the Ministry of Education (MOE).

Outside the MOE secondary school program is another, operated by the Department of Religion (AGAMA). There are 182 junior and 42 senior secondary schools directly under AGAMA, enrolling 23,000 and 4,700 students respectively. Also under the authority of AGAMA through a kind of accreditation system are 1,512 private junior secondary schools with 132,000 students, and a further 312 private senior secondary schools with 29,500 students (1976 figures).

In other words, there are two systems of state schools, one operated by MOE, the other by AGAMA. Within each, there are public schools and private schools.

Other government ministries operate schools at the secondary level, the largest program being that of the Department of Agriculture. It has 99 schools (grades 10-12) with an enrollment of 15,000.

The student-teacher ratio is 18:1 at the SLTP level and 15:1 at the SLTA level for all MOE schools. The ratio is smaller for private schools at both levels:

	<u>SLTP</u>	<u>SLTA</u>
Private	15:1	13:1
Public	22:1	19:1

At both the junior and senior secondary levels, enrollment in general schools is largest, followed by that for technical schools. It is clear that at the SLTP level, the trend to the general type of school is pronounced, due to GOI policy to phase out other types as soon as possible. Comparative enrollment figures for 1977 and 1980 show this movement:

Number of Schools, Students and Teachers in Public and Private Secondary Schools (1980)

	Schools			Students ('000s)			Teachers		
	Private	Public	Total	Private	Public	Total	Private	Public	Total
<u>SLTP or Junior Secondary School</u>	<u>6,295</u>	<u>3,510</u>	<u>9,805</u>	<u>1,284.7</u>	<u>1,697.9</u>	<u>2,982.6</u>	<u>84,843</u>	<u>78,735</u>	<u>163,578</u>
SMP/General	6,149	3,208	9,357	1,269.8	1,625.2	2,895.0	83,076	71,715	154,791
SMP/Economics	2	12	14	.6	3.9	4.5	20	206	226
SKKP/Home Economics	50	92	142	3.2	9.4	12.6	497	1,454	1,951
ST/Technical	94	198	292	11.1	59.4	70.5	1,250	5,350	6,610
<u>SLTA or Senior Secondary School</u>	<u>3,081</u>	<u>1,453</u>	<u>4,534</u>	<u>760.9</u>	<u>812.6</u>	<u>1,573.6</u>	<u>60,456</u>	<u>42,118</u>	<u>102,574</u>
SMA/General	1,664	683	2,327	388.1	455.3	843.4	30,866	20,847	51,713
SMEA/Economics	434	276	710	99.3	122.3	221.6	7,716	6,659	14,375
SKKP/Home Economics	91	72	163	9.3	16.2	25.5	1,285	1,690	2,975
STM/Technical	504	160	664	152.2	89.3	241.4	12,335	6,318	18,653
SPG/Teacher Training	400	211	611	111.2	114.6	225.9	8,135	5,522	13,657
SGO/Sports Teacher Training	8	51	59	.9	15.0	15.9	119	1,082	1,201

Enrollment Figures for 1977 and 1980 (All MOE Schools)

	<u>1977 ('000's)</u>		<u>1980 ('000's)</u>	
<u>SLTP or Junior Secondary School</u>	<u>2,340.0</u>	<u>%</u>	<u>2,982.6</u>	<u>%</u>
SMP/General	2,028.5	87	2,895.0	97
SMEP/Economics	102.8	4	4.5	-
SKKP/Home Economics	39.8	2	12.6	-
ST/Technical	168.8	7	70.5	2

Overall, enrollment ratios in secondary education increased significantly during the second half of the last decade. Female enrollment showed a slight but positive improvement:

Secondary School Enrollment Trends, 1974-1979

	<u>1974</u>		<u>1979</u>	
	<u>Junior</u>	<u>Senior</u>	<u>Junior</u>	<u>Senior</u>
School-Age Population ('000's)	9.2	8.3	10.2	9.6
Enrollment ('000's)	2.2	1.0	3.0	1.3
Enrollment Ratio (%)	24.0	12.0	29.0	16.0
Per Cent Female	41.0	35.0	43.0	38.0

As Indonesia implements its policy of extending primary education to reach the goal of universal enrollment - a goal that may well be achieved by the end of Repelita III - it must simultaneously face up to the fact that a greater number of youngsters will subsequently seek admission to secondary education. This pressure is already being felt, and Government forecasts for the first half of the 1980's show a substantial new demand for junior secondary spaces. This is due in large part to the results of the INPRES (Instruksi President) scheme, which has built thousands of new primary schools over the past ten years. Repelita III calls for a minimum of 33 per cent of grade 6 completers to be accommodated in the first year of the junior secondary school by 1984.

Enrollment Projections. The MOE has reported the following projections of enrollment at the secondary level for the 1980's ('000's):

	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>	<u>1985-86</u>	<u>1986-87</u>
<u>Junior Secondary</u>					
Grade 7	2,600	2,200	2,300	2,500	2,700
Grade 8	1,700	1,900	2,000	2,100	2,300
Grade 9	1,400	1,600	1,700	1,800	2,000
<u>Senior Secondary</u>					
Grade 10	650	720	790	870	960
Grade 11	570	630	700	780	860
Grade 12	500	550	600	680	750

As secondary school enrollments rise, the educational system must give close attention to problems of quality. These have to do with the way secondary education is organized and operated, the resources it has to work with, and the benefits obtained by Indonesians from their secondary education programs.

Problems of Organization and Operations

In Indonesia, as we have noted, education has many aspects, with public and private, secular and religious, government and nongovernment authorities having roles. In spite of the highly fragmented character of educational administration, there is an amazing amount being accomplished - a fact all too often ignored. With a total school population in excess of that for all of North America, and responsibilities covering more than 3000 islands, twenty-seven provinces, and a great variety of cultures, languages, and local constituencies, the educational leadership has a prodigious task.

Education is managed and supervised at five levels: school, subdistrict, district, province and nation. Each school has a headmaster, and larger secondary schools have deputies. Subdistricts (over 3400) are responsible for primary education. The district (300) is the smallest unit responsible for the complete range of educational services, grades 1-12. At the provincial level there is a full educational bureaucracy to supervise and coordinate the work of the districts. The Ministry of Education is at the apex of this structure. Over 130,000 individuals are involved in educational administration.

Throughout the administrative pyramid the significant constraints to effective operation are inadequate training and experience, finance and organization. Pre-service training in administration is rare at all levels and non-existent for primary school headmasters. In-service training for headmasters is a recognized need but has not yet been provided on a regular basis.

The majority of supervisors are former headmasters who have had no special training in supervision. The supervisor-schools ratio is 1:65, and supervisors are seldom able to visit schools. They are located in provincial capitals and have to rely on public transportation. Many have to depend for a large proportion of the expenses of their travel on contributions from parent-teacher associations. A survey in 1970 showed that supervisors on average made only two one-day visits to schools each month, a condition that has probably improved very little in the past decade.

Since experience has shown that the performance of administrators is a strong correlate of quality education, enhanced educational administration constitutes a promising avenue toward quality improvement. The World Bank, in its Second Teacher Training Project (Loan XI), will support a new national center for administrative training for headmasters and principals including pre-appointment training for potential managers. This has promise of making a significant impact.

Structural Problems. The National Assessment of Education pointed up a basic structural defect in the way secondary education is organized. This defect is that preparatory courses for students intending to go on up the educational ladder tend to dominate the secondary school's operations, to the detriment of terminal courses, tailored for youngsters who will not continue to higher levels. The basic issue here is one of devising a system of schools that will cater to the varied interests, abilities and future needs of a wide range of students without creating social and intellectual division.

One way to accomplish this is by means of the comprehensive school, which includes within itself a cafeteria of programs in commercial, vocational, technical and college preparatory "streams." Another way is to establish entire schools - or types of schools - to achieve the same streaming. This is the Indonesian system, and there have been several difficulties experienced in its operations, particularly in the last decade as the country's economy has expanded at an accelerated pace.

One difficulty has been the lack of a precise statement by the authorities of the specific functions of each type of school; of the junior economics secondary school, for example, or the junior technical secondary school. A second difficulty has been parental and student aversion to terminal courses, which has been accentuated by the absence of alternative forms of education and training for early school leavers. A third difficulty has been the shortage of equipment and specialist teachers to provide education as varied as school titles promise. Along with these problems there has been an over-production of academic graduates with little or no practical job-related experience, and an under-production of future technicians.

There have been attempts to experiment with other alternatives to this system of specialized schools; perhaps the best known is the "secondary development school." Eight 4-year development schools were set up as pilot projects under IKIPs, each of which enjoyed a great amount of independence in organizing the program of the school it controlled. It was apparently intended to incorporate into these schools some of the characteristics of the non-selective comprehensive school: a range of courses, including terminal ones; a strong component of special skills and practical; and some element of non-formal education. Experience with these pilot schools since 1972 has apparently left no illusion that changing over to a secondary system following the comprehensive school patterns will be easy. It is a conclusion reached by other developing countries that have experimented with the comprehensive school.

For one thing, the comprehensive model requires special skills, habits and attitudes that have not been common to the experience of Indonesian teachers and administrators. A school that sets out to cater to the infinitely varied requirements of the individual, rather than the common needs of classified groups of students would need a wealth of books, self-instruction and self-assessment instruments, and skilled guidance services that are not available. Changing over to such an operation would require a quantum leap into an entirely transformed

system. It would necessitate a commitment of sizable financial and political proportions.

The proposal to extend the pilot system of "development schools" from 1973 onwards was tabled when the new Minister of Education took office. The future of these schools is unclear, although further experimentation is continuing. Modular instruction has been introduced, for example. An evaluation of these schools is to be conducted in 1982, after which the MOE presumably will decide on next steps with the development schools.

It seems likely at this point that Indonesia will modify but keep its specialized secondary school system. One indication of this is the apparent decision to fuse the junior secondary schools (with the possible exception of the junior technical school) into a single type of institution. A major reason is the difficulty of finding satisfactory employment for the graduates of all types of junior school. The decision to create a unitary structure at the junior level presages a policy of universal education through part, if not all, of the junior secondary school years. The great majority of the junior schools will become integrated "improved SMP's" (Sekolah Menengah Pertama). There are several problems that appear to adhere to this new structure. First, the integrated SMPs will provide no terminal courses, but a large percentage of SMP students will probably be terminal. The relatively high rate of drop-out in the senior schools means that even more secondary students leave without any recognized qualification higher than SLTP graduation. This will be especially hard on the less able or non-academic type of student.

A second indication that Indonesia will continue its existing (although revised) specialized secondary school system is the GOI's decision to launch a new program of technical and vocational education with the help of the World Bank and the Asian Development Bank. In Indonesia, for administrative convenience "technical education" refers to education in the engineering (e.g., mechanical, electrical and civil) trades, while "vocational education" refers to non-technical education (i.e., commerce, home economics, agriculture, arts and crafts and social work).

Over the past decade, Indonesia has been able to attract a large amount of assistance to build up technical and vocational education. With a 1971 credit from the IDA, Indonesia built five Technical Training Centers to strengthen the programs of 15 satellite STMs (Senior Technical Schools). These TTCs are at Jakarta, Bandung, Surabaya, Medan and Ujung Pandang, and have been in operation since 1975. They have a combined capacity of 3000 training places and accept 13,500 students from the "feeder STMs." They produce 4,500 graduates per year.

Under a 1976 World Bank loan, an additional four TTCs have been built at Yogyakarta, Semarang, Padang and Palembang to service 10 feeder STMs, and produce an additional 3000 skilled graduates per year. From the same loan, two Technical Teacher Training Facilities were constructed at Padang and Yogyakarta for pre-service training of technical teachers. The annual output is expected to reach 500 after 1983.

A 1979 World Bank loan supports a program that will upgrade 12 agricultural development high schools and three in-service training centers. It will establish five new agricultural development high schools and seven new in-service centers. The majority of these schools and centers are in provinces outside Java. The project will also introduce courses in animal health and rural home improvement in all high schools and teacher training centers. The annual output of the development high schools is expected to rise from 4,560 to 7,440, and that of the in-service centers from 1,020 to 1,580.

The Asian Development Bank in 1978 undertook a project to upgrade 17 Senior Technical Schools (STM) located in 14 provinces and to establish a regional Technical Teachers Upgrading Center (TTUC) in Medan. A second project begun in 1980 involves upgrading another 16 STMs in 13 provinces, strengthening the Bandung TTUC and providing equipment for Technical Teacher Training Units in Bandung, Medan, Surabaya and Ujung Pandang. A new TTUC is being established in Malang.

A 1982 ADB vocational educational project will improve 48 senior vocational schools in 26 provinces. Twenty-two schools will be erected on new sites. Two Vocational Education Development Centers (VEDC's) will be built and outfitted. Under this project, 37 business schools (SMEA) will be helped, together with seven home economics schools (SMKK) and four arts and crafts schools (SMKIK). The increase in enrollment in all 48 vocational schools will be about 9,500, bringing the total enrollment in these schools above 30,000 by 1987.

The Problem of Inadequate Resources for Secondary Education

This problem has three aspects, physical, human, and financial, the first two being dependent on the third. With respect to the physical features of the secondary schools of Indonesia, a predominant characteristic is smallness. Large numbers of both junior and senior schools have only three or four classrooms. The National Assessment found the modal enrollment size to be 51-100. Two-thirds of junior secondary schools and one-half of the senior schools had fewer than 201 students. It appears that conditions have improved in recent years as the Ministry has taken steps to encourage the closing of smaller schools. A rough indication is found by dividing gross enrollment figures by the number of listed schools. This procedure yields a per-school enrollment of 304 for all junior secondary schools and 347 for all senior schools (1980 data). These are still not very large institutions; moreover, averages obscure the "tails" of the distribution causing us to forget the modest schooling arrangements in some communities. Of special concern are the private schools, which are almost always smaller than the public schools. The 1980 per-school enrollment computations for the private schools show them to be 100 students below the averages for total schools. Of equal concern are the more rural areas, where schools are not as large, mainly because a smaller percentage of the age group is enrolled. The Assessment showed that these provinces were the most disadvantaged, according to enrollment ratios (26 being the lowest in rank order):

<u>Provinces</u>	<u>Rank Order</u>	
	<u>Junior School</u>	<u>Senior Schools</u>
West Java	25	24
Lampung (South Sumatra)	25	26
South Kalimantan	24	23
Nusa Tenggara Barat	23	22
East Java	22	19

Small schools mean that the curriculum is limited, and students of these schools are at a disadvantage compared to those attending larger schools with bigger staffs and a greater variety of offerings. It is in the sciences that we find perhaps the most telling deficiencies, because without laboratory space and specialized equipment to carry out experiments, most science teaching consists of talking about science, and students copying notes from dictation or from the blackboard. Over the past few years a considerable amount of new science equipment has been distributed to public secondary schools. The private schools are less well off. However, the character of what goes on in the classrooms, especially in mathematics, science and English-language teaching is unclear. It is perhaps a potentially very serious lack in the information base.

The Assessment revealed that a sizable percentage of applicants to secondary schools were rejected, mostly for lack of space (but partly due to a shortage of teachers). It was the technical schools that rejected the highest proportion of applicants, and the lack of space and materials and equipment has long been a major weakness of technical-vocational programs. In a sample survey of 80 senior vocational schools conducted in 1980, specialist and demonstration rooms and workshops and science laboratories were found to be insufficient for the demands placed upon them. Support facilities such as libraries, staff rooms and offices for the headmaster were simply absent in many schools. Equipment and other instructional materials were only infrequently available to students. Much of the equipment does not work. For example, of 1672 typewriters, 86 calculators, 37 adding machines, 40 stencil duplicators, and 21 tape recorders, only 44 per cent, 59 per cent, 57 per cent, 45 per cent, and 71 per cent respectively, were found in working order.

The Assessment suggested that if the Government wants to increase the number of places in secondary schools, its most economical step, except in areas where no provision exists whatsoever, is to improve both the quality and the quantity of secondary education by adding classrooms to existing small schools. (In fact, this upgrading approach has been implemented in the World Bank and Asia Development Bank projects for vocational education.) In recent years, the MOE has established, as a working formula, 1200 students for junior secondary schools as a maximum size, down to a minimum of 200 in the less populous areas. These larger numbers should make more possible important economics of scale and greatly strengthened programs.

There is no doubt that a serious limitation in the secondary schools - as in the primary schools - is the shortage of textbooks for students

on the one hand, and reference-support libraries on the other. Only 13 per cent of Assessment schools claimed to have libraries, for example.

Recent evaluations by BP3K show a positive correlation between educational achievement of parents and the number of books in the home, a finding complemented by the research conclusion repeatedly reported around the world that the availability of books is the single most consistently positive school factor in predicting academic achievement. As a result both of the near total absence of textbooks in the primary and secondary schools of Indonesia and the support from research, the World Bank has joined forces with the GOI in a very sizable textbook production effort. In the last decade more than 300 million textbooks have been printed.

There have been problems. Poor design has prevented books from being as effective as they might be. The short physical life of textbooks and changing curricula necessitate constant revision and replacement. Also of concern is the fact that Indonesia has not yet developed adequate institutional structures for careful shipment and distribution, particularly to the rural schools and off-Java communities. A new World Bank project will produce another 82 million books and teachers' guides, and will establish mechanisms for correcting the kinds of attendant deficiencies noted.

Overall, provision of books, equipment and facilities are perhaps especially critical in lower secondary education, where the major enrollment pressures are manifesting themselves at this moment. Also, in addition to the expansion of technical programs in secondary schools, there will have to be even greater investments to deal with the large numbers of students entering into the secondary general stream over the 1980's.

Human Resources: teachers. The shortage of teachers in the secondary schools has been caused by the increased output from the primary schools initiated under Repelita II, and the Government's attempts to reach targets set during Repelita III for junior and senior secondary school enrollments. The overall lack of teachers and administrators at the secondary level has become a major problem. For the country as a whole, it is estimated that by 1995, almost 34,000 more secondary teachers will be needed than will be produced. There are also differences in prospective availabilities by region. For example, West Sumatra, Riau and Jambi will enjoy a surplus, while North Sumatra will have a deficit of 2325 teachers.

An Asian Development Bank report makes clear that a demand for specialized vocational teachers is also building, based on projections of requirements for vocationally skilled manpower. The total annual number of graduates of both public and private schools is about 70,000 currently, to increase to about 74,000 by 1987. In this period, an estimated shortfall of about 3000 teachers is expected. The ADB-supported Vocational Education Project (approved in 1982) will help Indonesia to meet 75 per cent of this deficit.

It is not only the quantity of teachers that is important, but also how well prepared they are. At the junior secondary school, marginally qualified teachers constitute over a quarter of the total, and it is expected that the increased numbers of primary school graduates soon to enter grade 9 will cause local officials to turn increasingly to unqualified candidates to fill vacancies. While unqualified teachers in senior secondary schools do not represent a problem at present (4,600 teachers, or one-eighth of the total), movement of the INPRES enrollment move to grade 10 in the latter half of the 1980's may create a condition similar to that in the junior secondary school.

To meet these problems and others (including teachers for special education programs), the World Bank is supporting the GOI strategy in teacher training. This will expand the secondary teacher training colleges to meet increased demand, and provide administrative training for headmasters and principals. New teacher training colleges will be located in geographical areas of highest potential deficit, drawing trainees from their home areas. The hope is that coming from the locale in which the teacher training college is located, trainees are more likely to remain following graduation.

The content and methodology of the teacher training curriculum is slated for upgrading and improvement under this project. It is hoped that pre-service and in-service components will enable the GOI to effect qualitative change among its current staff as well as new staff.

Student Performance and the Quality of Teaching. In general, student achievement levels are low. Results of the 1976 standardized tests administered to 10,000 grade 9 students revealed that only about 15 per cent were able to answer one-half the questions correctly. The weakest areas - in science and mathematics and English - are of significantly serious import for a nation striving to develop its resources and achieve the benefits of technology transfer. Similar results were obtained in tests of primary school pupils, and for all students, both primary and secondary, scores were lowest in Kalimantan, Sulawesi and the eastern islands, and highest in Java and Bali.

Reflective of the low achievement of students are the high drop-out and repeater rates. Because of this, enrollment declines from 34 per cent in grade 7 to 13 per cent in grade 12 (1979-80 data).

A problem with teaching that has been raised by everyone who has studied the Indonesia educational system is the fact that teachers usually hold more than one job. A study of grade 9 achievement estimated that 40 per cent of junior secondary teachers had at least one more job. Other researchers have found higher percentages for senior secondary school teachers. Given the fact that these findings are usually obtained through questionnaire methods that make it difficult to validate responses, these multiple employment figures are probably underestimations. The phenomenon is widespread throughout the educational system, being equally prevalent among primary teachers and university lecturers.

People hold other jobs because they need to supplement their salaries, which are very low. The chauffeur who drives the high MOE official's car may earn more per month, when single job salaries are compared, than his boss. To increase his earnings, the official may also serve as a professor at a nearby university when he is not working in the Ministry. He also may work as a consultant to one or more other agencies for additional remuneration.

An Indonesian Government official's salary is based on his education and years of service. The holder of a junior secondary school diploma with three years of service gets a basic salary of Rp 15,700 per month. If the employee has a senior secondary school diploma and three years of service, his monthly salary is Rp 23,400. A university graduate with a Bachelor's degree receives Rp 29,300 with three years of service. The Master's degree holder with the same three-year service record will receive Rp 37,500. Teachers, especially those who lack university degrees, fall into the lower government salary scales, and are particularly hard-pressed. In 1979-80, the average annual salary for the senior secondary school teacher was Rp 633,300 (\$1,013) and for the junior secondary teacher Rp 573,796 (\$918). An especially serious problem is the fact that salaries of mathematics and science teachers are very low. Primary school teacher salaries were lowest of all, averaging an estimated Rp 437,500 (\$700).

That the Government understands the situation its teachers find themselves in is seen in the fact that a full teaching week is defined as 24 periods of 40 minutes each, although the full schedule is 37 periods. Government teachers are supposed to perform any extra teaching beyond the 24 periods in government schools, for which they receive additional payments. In practice they are likely to spend their extra hours in the employ of private schools, where the pay may be two times the government scale.

Multiple employment's detrimental effects on quality are several:

- Teachers have less time to prepare lessons. Process-oriented teaching, which requires careful preparation, tends to be dispensed with.
- Evaluation and correction of student work tends to be neglected.
- Teachers have little time to get to know their pupils and to attempt some individualization of approach.

Finance for Education. (Note that this section encompasses all of education, from primary through tertiary.) Most of the recurrent and capital expenditure on education is financed by the Central Government. Provincial and local government bodies serve as fiscal agents for the Central Government and also make direct contributions, usually towards capital expenditure. Local communities occasionally provide school buildings, equipment and furniture on a self-help basis.

The Central Government budget is divided into development and routine expenditure, which correspond roughly to the more familiar

categories of capital and recurrent expenditures, except that recurrent expenditures under development programs are financed from the development budget. The total MOE budget for 1981-82 was Rp 747 billion (Rp 327 for development; Rp 420 for routine expenditure), or an increase of 36 per cent over 1980-81.

Salary comprises the largest item of routine expenditure, reaching 90 per cent in some schools. The MOE is not responsible for salary payments to the primary schools; these schools are supported out of the budget of the Ministry of Home Affairs.

The MOE also provides assistance to private schools in the form of monetary subsidies as well as teaching personnel, equipment and books. In 1980-81, such aid was provided to 1,250 private schools, amounting to Rp 2.1 billion.

The main additional source of revenue for the schools is tuition fees. These range from Rp 500 to Rp 2000 per month per student (average), depending on family income. Education in public schools is supposed to be free to children of low-income families.

During Repelita II, the MOE's total recurrent expenditure (in 1974-75 prices) per student rose slightly in primary education (from Rp 12,141 in 1974-75 to Rp 13,036 in 1979-80); dropped slightly in secondary education (from Rp 34,400 to Rp 33,382); and fell sharply in tertiary education (from Rp 145,148 to Rp 109,164). The MOE's total expenditures rose from Rp 87.5 billion to Rp 284.4 billion during Repelita II.

Recurrent expenditure is a significant part (10 per cent in 1979-80) of total education development expenditure (including the INPRES/SD scheme). However, it is only a small part (2.8 per cent in 1979-80) of total recurrent expenditure, due to the large size of the routine budget compared with the development budget in a given year. Therefore, the education development budget cannot cover major deficiencies of the routine budget. It does provide for a certain amount of flexibility in meeting some recurrent expenditure requirements in periods when special efforts are being made in one direction or another (e.g., a new teacher training program; heavy outlay for textbooks).

In Repelita III, recurrent costs for MOE schools will increase more than 270 per cent over the five-year plan period. If the total (routine and development) expenditure of the MOE are compared with total Government expenditures during Repelita III, the following picture emerges:

1974-75	5.6 per cent
1975-76	5.2 ✓
1976-77	5.8
1977-78	6.4
1978-79	5.9

However, the total national expenditure on education is far greater than what is provided by the MOE. As noted above, the Ministry of Home Affairs budgets salaries for primary school teachers. Also, it has been

estimated that parents directly contribute to the schools an amount equal to one-third of total public expenditures. The amount of parental (or other non-government) support for private schools probably raises this proportion closer to one-half of total public expenditure.

External Assistance. Contributions from the external assistance agencies to education and manpower training since 1969 have reached nearly \$600 million with 8 per cent going to primary education, 41 per cent to secondary education, and the remainder to various forms of tertiary education and high-level manpower development. The World Bank has provided \$343 million; 13 per cent has been loaned for primary education, 33 per cent for the secondary level, and 54 per cent for the third level. The Asian Development Bank has contributed \$115 million, about equally divided between secondary and tertiary education.

USAID has provided \$42.2 million in the past decade, 77 per cent for higher agricultural education.

Other donors are active as well. In a recent survey conducted by USAID/Indonesia, it was found that in the education sector per se there are currently fifty active projects whose initial funding was a total of nearly \$370 million.

Forecasting the Financial Demands. As the educational system continues to expand, greater sums will have to be found to meet costs. A recent set of forecasts prepared by a UNESCO team suggests the magnitude of the financial resources that will be required. In the following discussion of these projections, it should be noted that enrollment figures for SD (primary) schools include pupils in both public and private schools, while those for the secondary and tertiary levels do not include private school students. Also, expenditure figures include all expenditures of the MOE, together with those of the Ministry of Home Affairs (for primary education), the INPRES/SD funds and project aid from external assistance agencies. All projections of expenditures are in constant 1980-81 prices.

Routine Recurrent Expenditure. Projections of routine recurrent expenditures for the period 1981-82 to 1990-91 make use of 1980-81 figures, with the assumption that the 1980-81 routine recurrent expenditure per student at each level will rise annually at approximately the same rate (5.5 per cent) as overall GDP per capita. (The UNESCO experts point out that they are using GDP and population growth rates of 7.5 per cent and 2.0 per cent respectively to give a GDP per capita growth rate of approximately 5.5 per cent.) The rate of increase of income for the employed labor force (3.4 per cent) is slightly slower. Therefore, the UNESCO projection assumes that teacher salaries - the main component of routine expenditure - will rise faster than labor force incomes in general.

Government Routine Expenditure on Education 1974-75 to 1980-81, and
 Projected Expenditure 1981-82 to 1990-91 (Rp. billions) - Current Prices
 for 1974-75 to 1980-81, and 1980-81 Prices for 1981-82 to 1990-91.

<u>Year</u>	<u>Primary</u>	<u>Secondary</u>	<u>Tertiary</u>	<u>Total</u>
<u>Repelita II</u>				
1974-75	161.6	43.7	16.6	221.9
1975-76	229.1	69.5	17.9	316.5
1976-77	252.4	73.3	19.5	345.2
1977-78	390.0	105.2	25.5	520.7
1978-79	430.8	131.4	32.4	594.6
<u>Repelita III</u>				
1979-80	559.7	151.1	35.2	746.0
1980-81	816.4	247.2	53.7	1,117.3
1981-82	900.1	302.5	63.7	1,266.3
1982-83	991.2	370.8	75.5	1,437.5
1983-84	1,089.5	455.3	89.7	1,634.5
<u>Repelita IV</u>				
1984-85	1,171.9	560.0	106.2	1,838.1
1985-86	1,261.2	689.8	126.1	2,077.1
1986-87	1,354.9	851.5	149.5	2,355.9
1987-88	1,455.4	1,051.7	177.4	2,684.5
1988-89	1,560.3	1,300.7	210.3	3,071.3
<u>Repelita V</u>				
1989-90	1,672.0	1,439.0	249.4	3,360.4
1990-91	1,787.7	1,604.3	295.9	3,687.9

The purpose of the UNESCO projection is to identify at the macro level the future growth of educational expenditures, given current data on the projected growth of government expenditures overall.

A basic assumption is that the desirable policy is to sustain the momentum of educational development of recent years; that is, that enrollment will continue to grow in each level - primary through tertiary - at the same average annual compound rate in the period 1980-81 to 1990-91 as in the period 1974-75 to 1980-81.

The UNESCO Report makes a very important point, (in part perhaps because its analysis has generated some very large numbers):

"In principle, there are three alternative projection strategies: assume that education enrollment parameters are given, and then derive expenditures from unit costs; assume that the expenditure parameters are given, and then derive enrollments; or assume that some parameters are given for educational enrollments, and some for expenditures, and then derive either the remaining enrollments or the remaining expenditures depending on the purpose of the projection exercise.

"In the present case, the first assumption is adopted: the purpose of the projection exercise being to identify the future growth of educational expenditures at the macro level in light of currently available information on the future growth of government expenditures overall.

"It will be assumed that the desirable ('reference') policy is at least to sustain the momentum of educational development of the last few years. The policy is defined by a set of parameters that embody this momentum. These parameters are then used as a basis for the projections. If the expenditure implications are demonstrably not feasible (emphasis added), then an a priori case is made that new parameters need to be formulated."

Development Recurrent Expenditure. Development recurrent expenditures are projected from the base-year (1980-81) figures. It is assumed that development recurrent expenditure per student at each level will rise annually at the same rate as per capita GDP, as in the case of per student Routine Recurrent Expenditure.

Capital Expenditures. Overall capital expenditures per new student (in 1980-81 prices) in Repelita II were:

SD (primary)	78,538
SLTP	220,199
SLTA	497,658
Tertiary	2,449,504

These figures somewhat overestimate the true Repelita II capital expenditures per student place. Revised standards have been adopted for

Government Development Expenditure on Education 1974-75 to 1980-81, and Projected Expenditure
1981/82 to 1990/91 (Rp.billions) - Current Prices for 1974-75 to 1980-81 and 1980-81
Prices for 1981-82 to 1990-91

	<u>SD</u>	<u>SLTP</u>	<u>SLTA</u>	<u>Tertiary</u>	<u>Total</u>	<u>Total x 1.1</u>	
<u>Repelita II</u>							
1974-75	20.6	7.6	6.0	5.2	39.4		
1975-76	51.6	12.6	15.3	10.6	90.1		
1976-77	61.1	15.4	18.8	14.3	109.6		
1977-78	91.8	16.9	26.3	18.9	153.9		
1978-79	121.7	22.8	35.0	28.1	207.6		
<u>Repelita III</u>							
1979-80	171.3	30.0	44.5	39.1	284.9		
1980-81	270.7	52.1	63.7	57.6	444.1		
					(1)	(2)	(2) - (1)
1981-82	88.8	217.5	106.0	137.3	549.6	604.6	55.0
1982-83	92.7	267.3	126.5	163.6	650.5	715.6	65.1
1983-84	48.8	328.9	153.5	188.4	719.6	791.6	72.0
<u>Repelita IV</u>							
1984-85	49.2	405.0	187.1	223.4	864.7	951.2	86.5
1985-86	49.4	498.6	227.2	261.3	1,036.5	1,140.2	103.7
1986-87	49.1	612.8	276.0	306.8	1,244.7	1,369.2	124.5
1987-88	48.7	753.3	336.3	356.2	1,494.5	1,644.0	149.5
1988-89	47.8	120.5	411.4	419.3	999.0	1,098.9	99.9
<u>Repelita V</u>							
1989-90	47.1	150.7	503.9	492.6	1,194.3	1,313.7	119.4
1990-91	(47.0)	(170.0)	(603.2)	(579.3)	(1,399.5)	(1,539.5)	(140.0)

Repelita III (figures assume 1.5 students per place in SO, SMP, SMA, and 1.25 in STM, SMEA, SPG).

SO	83,333
SMP	500,000
STM	500,000
SMA	638,000
SMEA/SPG	1,000,000
Tertiary	3,400,000

Capital expenditures are then projected on the basis of these standards, beginning with 1980-81. It is assumed that the capital cost per student at each level rises annually at the same rate as GDP per member of the labor force (4 per cent). This assumption is needed to anticipate increases in the real costs of school construction - most important of which is the cost of labor.

Capital Expenditures (Rp. Billions)
(1980-81 Prices)

Year	SO	SLTP	SLTA	Tertiary	Total
1980-81 (budget)	270.7	39.0	47.8	43.2	400.7
1981-82	88.8	201.2	87.0	120.2	497.2
1982-83	92.7	247.2	104.3	143.4	587.6
1983-84	48.8	304.0	126.5	164.4	643.7
1984-85	49.2	373.9	154.8	194.9	772.8
1985-86	49.4	459.8	188.3	227.5	925.0
1986-87	49.1	564.6	228.9	266.7	1,109.3
1987-88	48.7	693.5	279.2	308.6	1,330.0
1988-89	47.8	45.8	342.1	362.9	798.6
1989-90	47.1	71.1	419.5	425.7	963.4
1990-91	(47.0)	(85.0)	(500.0)	(500.0)	(1,132.0)

Education's Share in Total Government Routine Expenditure. Routine expenditure on education as a proportion of total government routine expenditure will rise significantly from around 26 per cent in 1980-81 to around 36 per cent in 1990-91 (see below). The latter figure is comparatively high in an international perspective. The UNESCO report believes it is probably an overestimation: the growth rate assumed for total government routine expenditure (7.5 per cent) being on the conservative side. A 10 per cent growth rate would bring education's share of 1990-91 total government routine expenditure down to just under 30 per cent. The crucial overall implication according to the UNESCO report is that the projected expansion of the education system is probably attainable (in terms of routine expenditure), at least on the basis of international comparisons.

Education's Share in Total Government Development Expenditure. The share of education development expenditure in total development expenditure in Repelita IV is projected at 22.2 per cent by the UNESCO report. This is significantly above the 1980-81 figure of 14.8 per

Summary of Government Education Expenditures 1974-75 to 1990-91 (Rp.trillions) - Current Prices.
for 1974-75 to 1980-81, and 1980-81 Prices for 1981-82 to 1990-91

	Education Expenditure			Total Gov. Expenditure			GDP/	(1)	(3)
	Routine (1)	Dev't. (2)	Total (3)	Routine 1/ (4)	Dev't 2/ (5)	Total (6)			
<u>Repelita II</u>									
1974-75	0.222	0.039	0.261						
1975-76	0.317	0.090	0.047						
1976-77	0.345	0.110	0.455						
1977-78	0.521	0.154	0.675						
1978-79	0.595	0.208	0.803						
<u>Repelita III</u>									
1979-80	0.746	0.285	1.031						
1980-81	1.117	0.444	1.561	4.300	3.010	7.310	43.800	0.260	0.036
1981-82	1.266	0.605	1.871	5.300	3.390	8.690	47.000	0.239	0.040
1982-83	1.438	0.716	2.154	5.698	3.790	9.488	50.600	0.252	0.043
1983-84	1.635	0.792	2.427	6.125	4.070	10.195	54.400	0.267	0.045
<u>Repelita IV</u>									
1984-85	1.838	0.951	2.785	6.584	4.850	11.434	58.500	0.279	0.049
1985-86	2.077	1.140	3.217	7.078	5.290	12.368	62.900	0.293	0.051
1986-87	2.356	1.369	3.725	7.609	5.602	13.211	67.600	0.310	0.055
1987-88	2.685	1.644	4.329	8.180	5.933	14.113	72.700	0.328	0.060
1988-89	3.071	1.099	4.170	8.794	6.283	15.077	78.100	0.349	0.053
<u>Repelita V</u>									
1989-90	3.360	1.314	4.674	9.443	6.654	16.087	84.000	0.356	0.056
1990-91	3.688	1.540	5.228	10.151	7.047	17.198	90.300	0.363	0.058

1/ Figures from World Bank projections (growth rate of 7.5 per cent per annum from 1981-82 for government routine expenditure, and from 1980-81 for GDP). Subsidies excluded.

2/ World Bank projections. Growth rate of 5.9 per cent per annum from 1985-86.

cent. As the goal of universal primary education is realized, educational investment will move increasingly into the secondary and higher education sub-sectors, which are much more capital-intensive. Since a revised growth rate of 10 per cent for total government routine expenditure would reduce the growth rate of the development budget, the 22.2 per cent figure may well be an underestimation.

It appears that in view of increases in the development budget for education, the Central Government probably plans to undertake a substantial secondary school construction program, particularly in provinces where there are comparatively few schools. This will have to be a long-term commitment given the heavy new enrollments that are expected. It seems likely that the new construction will address first the space shortage at the junior secondary level, and then at the senior secondary level, but in any case, there isn't much time to spare.

Total Government Education Expenditure in GDP. According to the UNESCO report, the share of total government education expenditure in GDP will increase from a 1980-81 level of 3.6 per cent to 6 per cent by 1987-88 (a peak year for development expenditure on education). Compared to other countries, this figure may be somewhat elevated. Nevertheless, it is considered to underestimate the national effort in education significantly, because it fails to take account of the expenditure on education and training by ministries other than the MOE and the Ministry of Home Affairs. Nor does it include financing provided by provincial governments, or Indonesia's private education sector.

It is interesting that in spite of the size of the outlay for education projected by the UNESCO report (a rise from 26 per cent to 36 per cent in education's share of the routine budget, and from 15 per cent to 22 per cent of the development budget), the GOI this year has announced a Rp 1.3 trillion development budget in education, which is Rp 554 billion more than what the UNESCO report projected for 1982-83.

In spite of the great sums of money earmarked for education, and the great pressures felt by the GOI (not a few of its own making), it may prove difficult to spend these sums. Let us attempt to illustrate why.

The UNESCO projections say that by 1990-91 all children through age 15 will be in school, and that 90 per cent of the 16-18 age group will be enrolled. They further say that 12 per cent (a ten per cent jump in ten years) of people 19-24 years of age will be enrolled in some form of tertiary education:

<u>Level</u>	<u>Age-Group</u>	<u>Gross Enrollment</u>	<u>G.E.Ratio</u>
Primary	7-12	28,834,000	100%
Junior Secondary	13-15	11,770,000	100%
Senior Secondary	16-18	8,827,000	90%
Tertiary	19-24	2,064,000	12%

These numbers would roughly follow this age cohort pattern for the secondary level in 1990:

<u>Grade</u>	<u>Age</u>	<u>Enrollment</u>
7	13	4,540,000
8	14	3,867,000
9	15	3,363,000
10	16	3,297,000
11	17	2,954,000
12	18	2,576,000

Now let us consider the smallest of the UNESCO projections, the 12 per cent figure for tertiary education.

According to the above figures, there will be 2,576,000 graduates of the Senior Secondary School in 1990. What proportion may expect to be admitted to tertiary-level institutions, either into the senior technical schools and polytechnics to enter the ranks of technicians, or into the universities to obtain professional credentials? Currently, there are about 520,000 students enrolled in tertiary institutions. Of this number, about 5 per cent graduate each year, opening up approximately 26,000 vacancies. The higher education institutions are trying to expand their enrollments. This year, for example, 76,000 new students were accepted.

The UNESCO projections suggest that by 1990 the tertiary institutions will enroll 2,064,000, which would necessitate almost a 400 per cent expansion over the ten year period.

To accomplish such growth requires a great amount of money, which Indonesia may have available, but it will also require a quality and level of planning and management that the educational system will find difficult to bring to bear. There are not enough faculty to teach these numbers; those who need to be trained probably cannot be prepared in ten years under existing methods. The 1990 target of 12 per cent enrollment for tertiary education is therefore unattainable, unless radically different methodologies are used; for example, distance-teaching by radio and correspondence. Even granting the possibility of reaching the large numbers projected by the UNESCO report, it is a very large order to manage it by 1990.

Indonesia's Human Resources Requirements. Experts in manpower planning distinguish four non-agricultural skill categories, Professional, Technician, Skilled Worker and Semi-Skilled Worker. The following table shows the corresponding amount of education needed for each.

<u>Skill Level</u>	<u>Education/Training Level</u>	<u>Grades</u>
Professionals	Universities and other institutions of higher education	13-19
Technicians	Academies and Polytechnics	13-15
Skilled Workers	<u>Senior Technical Schools</u>	
	STM: 3-year course	10-12
	STM(P): 4-year course	9-12
	Senior Vocational Secondary Schools Agricultural Development Schools	10-12 10-12
Semi-Skilled Workers	<u>Junior Technical Schools</u>	
	<u>Junior Rural Vocational Schools</u>	7-9
	Vocational Training Centers	no grade
	Mobile Training Units	no grade

For the period 1980 to 1990, nonagricultural manpower requirements have been projected by the Asian Development Bank as follows.

<u>Skill Category</u>	<u>Employment</u>		<u>Average Annual Additional Needs (1980-1990) due to</u>		
	<u>1980</u>	<u>1990</u>	<u>Economic Growth</u>	<u>Attrition</u>	<u>Total</u>
Professional	280,000	440,000	16,000	3,000	19,000
Technician	870,000	1,330,000	46,000	17,000	63,000
Skilled	2,760,000	4,960,000	220,000	80,000	300,000
Semiskilled and Unskilled	19,190,000	28,700,000	950,000	770,000	1,720,000
Total	23,100,000	35,430,000	1,230,000	870,000	2,100,000

(figures do not add to totals due to rounding)

Agricultural manpower requirements are estimated to be about 12,000 per annum by 1990. Supply is estimated at about 5000.

The various reports on labor force needs make evident that Indonesia must have a secondary education program that can supply it with entrants to specialized technical training and professional education institutions as well as with individuals with adequate vocational skills to enter the labor force directly.

Program Composition and Output. Professional level training at universities and other institutions has been discussed at another point; here we are concerned with the training of Technicians, Skilled Workers and Semi-Skilled Workers.

Technicians are trained in three ways. There are about 3,000 students in private academies, which are not generally of high quality because of inadequate facilities, a lack of specialized equipment for

practical work, and underqualified staff. There are two exceptions: a Jesuit-run program in Solo and the Swiss-assisted polytechnic in Bandung.

Technicians are also trained by the Department of Industry in six post-secondary institutions enrolling about 2,600 students (in 1977). One school provides post-graduate training for industrial management and five provide three-year diploma training in chemical analysis, leather and textile technology, and industrial management. Graduates number about 12 per cent of enrollment. These institutions are considered to be well managed and provide high quality training on an in-service basis to Department of Industry employees. Similarly, the Department of Public Works sponsors two- and three-year diploma training for its staff to meet urgent needs for subprofessional engineers. These programs, enrolling about 800 in 1977, are carried out under contract by the Institute of Technology, Bandung, the Institute of Technology, Surabaya, and Gadjah Mada University. Their annual output is approximately 15 per cent of total enrollment.

Prior to 1972, most technician training under the MOE was found in eight public technical academies. In contrast to the training provided by the Department of Industry and the Department of Public Works, the MOE academies were inefficient and had poor quality teaching. The GOI phased them out and transferred their programs to nearby universities. In 1976 these diploma-level programs (Pendidikan Ahli Teknik, or PAT) enrolled 3,000 trainees in chemical, civil, mechanical, electrical, and shipbuilding engineering. But the same kinds of quality problems experienced by the weaker private technician academies have marked the operations of the PAT programs as well.

Six of the PAT programs are being replaced by polytechnics being developed under the IBRD Seventh Education Project. By 1986, these institutions will have a total output of about 1,300 per year. In addition, the Government plans to strengthen and expand diploma-level courses in existing universities wherever possible to provide training in the fundamentals of civil, mechanical and electrical engineering. Training would emphasize practical skills required by industry. Closer working relations would be needed with business and industry to link classroom training to future job assignments.

Future skilled workers are given formal training in the Senior Technical Schools (STM and STM-P). In 1978, the total enrollment in the 126 public STMs and eight STM-Ps was about 78,000. In the 474 private STMs, the enrollment was approximately 130,000. A recent Asian Development Bank mission found that only 20,000 public and private students were prepared adequately per year to the level of practical skills required by industry.

The Government has standardized the programs in all public STMs, which now offer courses in five basic technical areas: automotive, building, electrical, electronics and mechanical engineering. The number of students admitted into each course at an STM are to be determined by the manpower needs of industry in the area it serves.

The basic strategy with the Government-run STMs is to provide students with broad-based vocational skills so they can become competent industrial workers with a minimum of on-the-job training. The demand - actual and potential - for places in the STMs is great, and the GOI plans to upgrade 105 throughout all the provinces of the country. External assistance has been obtained for 86 STMs to date.

Skilled workers are also produced by senior vocational secondary schools for business and commerce and the services sectors. There are five main types, new categories created only last year.

The SMEA or business schools (constituting the largest number of vocational schools) offer courses in accounting, office work and secretarial services. Graduates take jobs as secretaries, bookkeepers, accounts clerks, typists, and salesmen. In 1981 there were 283 SMEA with an enrollment of 130,000, of whom 50 per cent were girls. The SMKK, or Home Economics Schools, offer courses in food and catering, dressmaking and tailoring, institutional housekeeping, hairdressing and beauty care and home extension. Graduates work as mid-level employees in the catering, garment, clothing, cleaning and culinary services. There were 89 SMKK in 1981 with about 20,000 students, 98 per cent of whom were girls.

Arts and Crafts Schools (SMKIK) offer courses in local handicrafts such as sculpture, woodwork, batik, leatherwork, metalwork, ceramics, and decorative art. Graduates find employment as handicraft workers, designers, artists, and craft instructors. There were 17 of these schools in 1981 with about 4,200 students. Thirty-five per cent were girls.

The Agricultural Schools (SMP) offer courses in agricultural science and agricultural production, and train students to become skilled workers in agricultural areas. In 1981 there were 18 SMP, with 4,500 students, including 500 girls. Social Work Schools (SMPs) offer courses in welfare work and care of the handicapped. They train workers for welfare homes and institutions. In 1981 there were 10 of these schools with 3,700 students. Forty per cent were girls.

In 1981-82, the MOE classified 417 secondary schools as public vocational schools. They had a total enrollment of 162,300 students.

As a result of the Presidential Decree (Number 34) of March 1972, vocational education in the public sector started receiving more attention. In Repelita III, the following targets were set up:

- Completion of the renovation and upgrading of 438 senior vocational schools.
- Production and distribution of 10.5 million textbooks to these schools.
- Recruitment and training of 12,500 new teachers through a special diploma program.

In 1980-81 there were also 522 private senior vocational schools with about 108,000 students, of whom 58 per cent were girls. Because of low quality, the graduates of these schools lack sufficient skills for employment.

Senior public vocational schools are concentrated in the more developed provinces. Forty-six per cent of the SMEA, SMKK and SMKIK were located in Java in 1981-82. About 70 per cent of all private vocational schools were in the five provinces of Java in 1979-80.

The Asian Development Bank has recently decided to assist with the upgrading of 48 senior vocational schools in 25 provinces, as noted earlier.

Another source of skilled workers is the Agricultural Development School, under the Ministry of Agriculture. There are two general types, marine fishery and agriculture. The latter includes training in crops, animal husbandry and inland fishery. Altogether 99 of these schools produced 2,810 graduates in 1977-78 from an enrollment of 12,030. All 97 of the agricultural type offer a core curriculum (72 per cent of teaching time) which is designed to provide students with the broad background needed by middle-level agricultural technicians who work in a mixed farming system. This is particularly true for extension workers involved in the transmigration and cooperatives programs.

Of the core, 65 per cent is allocated to social and natural sciences and 35 per cent to general agriculture. Each school gives the remaining teaching time (28 per cent) to specialization in crop production, animal husbandry or inland fisheries, depending upon the predominant agricultural enterprise and the manpower requirements in the region the school serves. Overall, the curriculum, introduced under the World Bank's Second Education Project, consists of 34 per cent general education and 66 per cent technical subjects. The proportion of lecture and practice is about fifty-fifty.

Semi-skilled workers receive formal training in the Junior Technical Schools and the new Junior Rural Vocational Schools, which are replacing the former. Workers are also trained in the Vocational Training Centers (PLK) administered by the Department of Manpower. At present there are eight PLKs offering six-months training courses for out-of-school youth and unemployed adults. Another seventeen are being provided under the IBRD Fourth Education Project. The Department of Manpower has also set up a system of Mobile Training Units (MTUs) to train unemployed youth and adults in both urban and rural areas in basic industrial and agricultural skills. There are 27 units with a training capacity of 1,400 places..

The Female-Male Imbalance. In 1979, 43 per cent of the junior secondary school enrollment was female. In the senior secondary school only 38 per cent were. There is no evidence that this is due to systematic discrimination against girls; that is, that the Government has an explicit or tacit policy limiting female enrollment. Nevertheless, it appears that there is a widely-held understanding that only exceptional girls will continue their education after the secondary school. As the data (above) indicate for the programs of the senior vocational schools,

the percentage of total enrollment that is female runs between 11 per cent (for the agricultural schools) to 98 per cent (for the home economics schools). Overall, 54 per cent of the students in the senior vocational schools are girls. This suggests that by the secondary school years the majority of girls are channeled into terminal programs.

The GOI seldom reports female enrollment separately, and the Banks consistently avoid the issue of any sex imbalance in the way education is carried out in Indonesia. A majority of the people of Indonesia are Muslim, and there is a strong tradition that encourages females to stay out of the marketplace and to give their attention to homemaking and other activities considered traditionally feminine. The school system reflects this cultural preference.

It seems very likely, however, that as enrollment rates climb upward at the primary and junior secondary levels over the next few years, greater numbers of girls will subsequently enter the senior secondary levels and then the university. It is especially considered very likely that more and more women will enter the teaching profession, particularly at the primary school level.

The Problem of External Efficiency of Secondary Education

Demand and Supply. Manpower requirements are difficult to project under the best of conditions. In Indonesia the job is complicated by gaps in information. Educational enrollments, employment statistics, sectoral growth rates and other data may be incomplete for key time periods. Systematic analysis is made more difficult and estimation becomes a too easy substitution for hard facts. To arrive at some picture of supply and demand with respect to educated manpower is a case in point.

Earlier we saw that by 1990 Indonesia will require the following numbers of new entrants into its labor force:

Professional (University graduates)	19,000
Technicians (Completion of 2 years post-secondary)	63,000
Skilled (Completion Senior Secondary School)	305,000
Semiskilled (Completion 9 years of schooling) and Unskilled (Completion 6 years)	1,720,000

Can the educational system supply these needs? Will it produce a surplus or a deficit? In the section on finance, the UNESCO projections of enrollment to 1990 were presented and the point made that the projections were based on the direction Indonesian educational policy seems to be pointing. The implication was and is that if the enrollment figures are unrealistic in terms of financial affordability or infeasible in terms of human and institutional capabilities, this needs to be demonstrated as soon as possible. The case was made earlier that the enrollment target of 12 per cent for tertiary level education seems to be impossible of attainment in just ten years. Let us now consider some other ramifications of the UNESCO projection.

It will be recalled that in 1990, based on the UNESCO study, the following estimated numbers of students will be enrolled in secondary schools:

Grade 7	4,540,000	Grade 10	3,297,000
8	3,867,000	11	2,954,000
9	3,363,000	12	2,576,000

If enrollment should rise as the UNESCO report suggests, and ways found to enroll 12 per cent of the 19-24 age group (or 2,064,000) in higher education, what percentage of the 1990 twelfth-grade graduating class would gain entrance? Let us assume that by 1990, tertiary education institutions have increased their efficiency to 19 per cent (that is, 19 per cent of total enrollment actually graduate), and that in addition, another 50,000 new places are created each year. (If efficiency should rise only 2 per cent each year, in fact, and the way found through distance teaching, perhaps even an Open University, to add the 50,000 new spaces each year, the total enrollment at the tertiary level would rise to 2,090,780, well above the target of 2,064,000.)

Under these conditions, then, about 375,000 new places would be opened in 1990. However, given the fact that unsuccessful applicants from previous 12th grade graduating classes will be trying to gain entrance in 1990, it is unlikely that more than three-fourths of the 375,000 spaces could be claimed by the 1990 class. This means that 281,250 of the 2,576,000 students would be admitted to tertiary education. What shall become of the remaining 2,294,750?

Some will bide their time, not actively entering the labor market, but planning to reapply for higher education openings in 1991. We cannot be sure what number would do this, but assume it must be rather high, perhaps as many as one-half the remainder. Thus, 1,147,375 members of the 1990 twelfth-grade class would move into the labor force to find jobs.

We assume that they would first look for jobs in the Skilled Worker category. In 1990 there would be only about 305,000 positions (this number including agriculture), leaving 842,375 individuals still unemployed. These will drop into the Semiskilled and Unskilled Worker category in order to find employment. But already looking for work at that level are the dropouts from the junior secondary school, particularly grade 9 completers. Let us assume for the purposes of this illustration that approximately 10 per cent of total primary school pupils are dropouts. (This is probably a substantial underestimation. At the present time it is estimated that graduating 6th graders are from cohorts which were 50 per cent larger at the time of their entrance into grade 1.) Thus about 2,883,400 of these youngsters would be looking for jobs in the lowest skill categories in 1990. They, together with the secondary graduates who are looking for work, total 3,725,775. But there will be only 1,720,000 jobs available, leaving approximately 2 million youngsters without jobs in the nonagricultural occupations. They will have to be accommodated in the agricultural sector, if they are to find employment.

Some difficulties of the foregoing illustration are that,

- human beings cannot be manipulated with the same ease as numbers on paper. If there is some percentage of twelfth-graders who cannot get into the university, for example, to suggest that they could then be assigned places in polytechnics, or to jobs of some sort, is to oversimplify the human relations component.

- job classifications must be treated with care. All of the jobs classified for "Skilled Workers" or for "Technicians," for example, are not alike. Even jobs in the same sub-category may be quite different.

- because people need jobs and are willing to go to work does not mean they will be hired, or if hired that they will be retained.

- there are geographical limitations in finding a place in school or finding a job. If there are several hundred thousand persons who have terminated their education, they may be in the wrong place to be employed as Skilled Workers or in some phase of agriculture.

Educated Unemployed. These and other considerations complicate the overall task of fitting educated people to productive jobs, and underscore the great concern that by permitting the numbers of the educated to rise, and especially by expanding secondary education, Indonesia may be creating a tide of "educated unemployed."

One source of the concern is experience in other countries like India, Ceylon, Argentina and Malaysia, where studies have shown that the rate of unemployment was greater at certain points for secondary school graduates than for primary school leavers. Another, more proximate cause is the national labor force surveys (SAKERNAS) of 1976, 1977 and 1978. At the time of the last survey, unemployment in urban Indonesia was 6 per cent, a high rate at a time of rapid economic growth. Moreover, the incidence of unemployment was inversely proportional to amount of education, and especially high for secondary school graduates:

<u>Completed Primary School</u>		<u>Rate</u>	<u>Completed Secondary School</u>		<u>Rate</u>
<u>Age</u>			<u>Age</u>		
	15-19	20%		15-19	37%
	20-24	13		20-24	30
	25-29	6		25-29	8
	30+	2		30+	3

On the other hand, the labor market survey indicated that once secondary school graduates do get jobs, their earnings tend to be high. Mean earnings per month for urban males who have completed secondary school are nearly two times the earnings of workers who have only primary schooling:

	<u>Completed Primary School</u>	<u>Completed Secondary School</u>
Mean	Rp 26,000	Rp 47,000
Proportion earning at least:		
Rp 20,000	55 per cent	86 per cent
Rp 30,000	32	65

To help to illuminate the relationship between education and unemployment, an investigation was conducted by a World Bank consultant (June 1982), largely reporting on the results of a tracer study. The tracer study was carried out over a two-year period (through September 1978), and involved a representative sample of 160 schools of nine different types (primary, junior secondary and senior secondary).

The tracer study showed that the process by which new senior secondary graduates go from school to work takes time, but the number with jobs increased steadily over the two-year period. Further, the growth in employment was in higher quality, better-paid jobs, many of which were in the private sector. Two years after graduation 40 per cent of the subjects were in some type of full-time education. Among those not in school who wanted work, more than one-fourth had yet to find a first job.

The investigation concluded that

1. The high unemployment rates reported by SAKERNAS for secondary school graduates were not evidence of an oversupply of such graduates. Unemployment appears to be dominated by a minority of persons who are in the midst of an extended period of unemployment. Most of these are young people who are in the long process of going from school to work. (This conclusion is substantiated by experience in a wide range of developing countries where unemployment is concentrated among younger people, and among them it is concentrated in the early years of their working lives. They are absorbed into work very slowly, for reasons not wholly understood; but they are absorbed, and replaced by a fresh cohort just coming out of school.)

2. Secondary school graduates are more productive than are primary school graduates. Secondary education is expensive for society, but the benefits exceed the costs. Data were limited, but did indicate that secondary education is a good investment and should be expanded.

Importance of Vocational Education. There is a wide variation among countries in the importance of vocational education at the secondary level. In terms both of the proportion of vocational secondary students to general secondary students, and in terms of the absolute numbers of youngsters enrolled in vocational programs, Indonesia is close to the top of the list, particularly so among the less developed countries.

Why has Indonesia chosen to invest so heavily, given the traditionally strong arguments against formal vocational schooling? For one thing, although vocational high schools are several times more expensive than general high schools, when a country must build all kinds of schools almost from scratch, the argument on relative costs probably loses much of its force. Moreover, Indonesia has been able to obtain the funding, not only from its own treasury, but from the World Bank and the Asian Development Bank.

The argument that better vocational training is available on the job than in schools is much more persuasive in an economy with a variety of firms experienced enough to take on younger workers for apprenticeships. This is not the case yet in Indonesia. The recent AIO "Policy Paper on Education and Technical Training" (draft from PPC dated 8 September 1982) makes a similar point: "even when the employer is in a financial position to sponsor training, and when the training is short-term and directly related to specific jobs or employment-related skills, most employers do not have the technical capacities to develop and implement their own training programs." Moreover, there must be an established linkage between the schools and the private sector, if on-the-job training programs and secondary general education programs are to complement one another effectively. This linkage is yet to be forged in Indonesia.

There are other arguments of course: that vocational school teachers ought to be well-trained teachers as well as having industrial experience, but that such people are scarce; that the equipment of vocational schools is liable to be either outmoded or so advanced as to have little relevance to the market place; that it is virtually impossible to stimulate the actual rhythm and discipline of factory work in the classroom; and that most students regard vocational schools as second-best opportunities and hence are reluctant to take their training seriously. These have apparently not been persuasive enough to deter either the GOI or the Banks from supporting the creation and equipping of a very sizable vocational education program.

III. Higher Education

Overview

At the time of its independence in 1945, Indonesia had very little in the way of highly educated and skilled manpower to deal with development problems. The country had fewer than 1,000 university-trained leaders to confront the massive problems of uniting the hundreds of inhabited islands into a cohesive political structure, formulating a national language and developing the institutions crucial to development. All of these graduates had received their academic degrees abroad. There was no local source of supply to meet the great demand. Although a handful of post-secondary institutes or academies had been organized by the Dutch prior to 1940, the first full-fledged university, Gadjah Mada, was founded only in 1949.

Recognizing the great obstacle to development caused by lack of higher education institutions, the government set about the task of establishing universities and institutes to provide the knowledge, skills and research bases essential for developing Indonesia's high level manpower. Thirty-seven years later there are 43 public and about 325 private Indonesia institutions striving to meet a continuously increasing demand.

The following table shows the public universities, technical institutes and teaching institutes (IKIPs) by location, date founded and approximate enrollments in 1975 and 1979. These institutions were already operating at the time of their founding. Some were faculties attached to other public universities or private institutions which wished to become public.

University development was sporadic during the first fifteen years of independence because the government devoted much of its effort to quelling rebellions and uniting the far-flung cultural groups under a central rule. However, by the end of 1959 seven national universities and the first Technological Engineering Institute were created. During the next four years (1960-63), 18 universities and two technical institutes were added. 1964 saw ten special Teacher Training Institutes (IKIPs) established.

The GOI realizes that supply must meet demand at the geographic location where it is needed. It has developed a policy of creating and supporting at least one major public university in each province so that the Governors and Provincial Planning Agencies (BAPPEDA) may have an intellectual/technical resource that is part of the cultural and physical environment. "Unity through Diversity" is one of the five principles of Pancasila, the Indonesian ideology. It means that one nation will grow from many roots, drawing upon human, natural and institutional resources of different types. Local indigenous universities have an important role and responsibility in implementing this philosophy.

Public Universities by Location, Date of Founding, and Enrollment Growth From 1975 to 1979

No.	Universities/Institutes	Location	Year Founded	Enrollment	
				1975	1979
1.	Universitas Gajah Mada (GAMA)	Yogyakarta, Central Java	1949	14,313	17,276
2.	Universitas Indonesia (UI)	Jakarta	1950	6,611	11,732
3.	Universitas Sumatra Utara (USU)	Medan, North Sumatra	1952	6,896	9,175
4.	Universitas Airlangga (UNAIR)	Surabaya, East Java	1954	4,171	4,758
5.	Universitas Andalas (UNAND)	Padang, West Sumatra	1956	3,073	3,748
6.	Universitas Hasanuddin (UNHAS)	U. Pandang, South Sulawesi	1956	6,090	8,502
7.	Universitas Pajajaran (UNPAD)	Bandung, East Java	1957	8,107	10,681
8.	Institut Teknologi Bandung (ITB)	Bandung, East Java	1959	6,366	6,263
9.	Institut Teknologi Surabaya (ITS)	Surabaya, East Java	1960	3,250	3,455
10.	Universitas Diponegoro (UNDIP)	Semarang, Central Java	1960	5,871	6,610
11.	Universitas Lambung Mangkurat (UNLAM)	Banjarmasin, South Kalimantan	1960	1,670	4,996
12.	Universitas Sriwijaya (UNSRI)	Palembang, South Sumatra	1960	3,506	7,423
13.	Universitas Sam Ratulangi (UNSRAT)	Manado, North Sulawesi	1961	2,805	5,546
14.	Universitas Syiah Kuala (UNSYIAH)	Banda Aceh, North Sumatra	1961	2,459	5,564
15.	Universitas Mataram (UNRAM)	Ampenan, Lombok	1962	636	1,972
16.	Universitas Mulawarman (UNMUL)	Samarinda, East Kalimantan	1962	748	3,008
17.	Universitas Nusa Cendana (UNDANA)	Kupang, Timor, NTT	1962	1,759	2,358
18.	Universitas Pattimura (UNPATTI)	Ambon, Maluku	1962	1,330	2,707
19.	Universitas Riau (UNRI)	Pekanbaru, South Sumatra	1962	1,116	2,656
20.	Universitas Udayana (UNUD)	Denpasar, Bali	1962	3,107	6,945
21.	Institut Pertanian Bogor (IPB)	Bogor, West Java	1963	2,974	3,369
22.	Universitas Brawijaya (UNBRAU)	Malang, East Java	1963	4,559	5,288
23.	Universitas Cenderawasih (UNCEN)	Jayapura, Irian Jaya	1963	559	1,556
24.	Universitas Jambi (UNJAM)	Jambi, South Sumatra	1963	338	1,433
25.	Universitas Jember (UNEJ)	Jember, East Java	1963	2,635	5,549
26.	Universitas Jend. Sudirman (UNSUD)	Purwokerto, West Central Java	1963	1,033	1,945
27.	Universitas Palangka Raya (UNPAR)	Palangkaraya, Central Kalimantan	1963	644	835
28.	Universitas Tanjungpura (UNTAN)	Pontianak, West Kalimantan	1963	1,860	3,694
29.	IKIP Bandung	Bandung, West Java	1964	4,471	8,503
30.	IKIP Jakarta	Jakarta	1964	1,756	4,654
31.	IKIP Malang	Malang, East Java	1964	2,092	3,245
32.	IKIP Manado	Manado, North Sulawesi	1964	1,630	3,220
33.	IKIP Medan	Medan, North Sumatra	1964	3,289	5,107
34.	IKIP Padang	Padang, West Sumatra	1964	1,549	1,811
35.	IKIP Semarang	Semarang, Central Java	1964	2,065	3,500
36.	IKIP Surabaya	Surabaya, East Java	1964	3,433	3,273
37.	IKIP Yogyakarta	Yogyakarta, Central Java	1964	4,414	4,938
38.	IKIP Ujung Pandang	Ujung Pandang, South Sulawesi	1964	3,045	3,738
39.	Universitas Lampung (UNILA)	Telukbetung, South Sumatra	1965	1,111	2,850
40.	Universitas Sebelas Maret (UNSEMAR)	Surakarta, Central Java	1977	-	7,989
41.	Universitas Halu Oleo (UNHOL)	Kendari, South East Sulawesi	1981	-	-
42.	Universitas Tadulako (UNTAD)	Palu, Central Sulawesi	1981	-	-
43.	Universitas Bengkulu	Bengkulu, South Sumatra	1982	-	-

Totals 1975: 127,851

1979: 201,922

All but one of the 27 Indonesian provinces now have a nationally-organized university to backstop their development efforts. The new province of Timor-Timur (1976), which still has no secondary school graduates, is expected to join the national university system as soon as the source of student supply is established. The foregoing table shows how the GOI has stressed the importance of spreading university development throughout the country even though most (65 per cent) of the population is located on the island of Java.

In addition to these forty-three public institutions, the private, religious (and quasi-government) sector has developed more than 325 entities which grant post-secondary diplomas and university level degrees. This group includes 62 universities, 69 higher schools and 194 institutes and academies.

All are literally bursting at the seams. Recent GOI figures show a total enrollment of over one-half million students: 321,000 in public and 183,000 in private institutions.

Ultimate responsibility for post-secondary education lies with the Directorate General for Higher Education (DGHE) of the Ministry of Education and Culture (MOE). Prior to 1970 most line ministries developed their own post secondary-institutes and academies to provide training and skills relevant to their functional responsibilities. These ministries usually financed and supervised their own programs; the MOE had no special role. In the early 1970's, however, the MOE began to exert its influence and regulatory power over the curriculum, length of study, admissions requirements, degrees conferred and the quality of the teaching staff. By Presidential Decree in 1974, the MOE was instructed to assist in determining the need for the numerous ministerial institutions, and to begin to close those deemed unnecessary. Those ministerial academies and institutes which remain today are managed by their own ministry under the guidelines of MOE.

Through the DGHE, the government of Indonesia also is rapidly expanding the diverse, non-academic certificate or diploma programs at the post-secondary level. These "junior college"-type courses last from one to three years and provide mid-level technical instruction. In 1980-81 about 20 per cent of total public and private enrollments were at the S-0 (diploma) level.

Despite very rapid growth from a meagre base, the higher educational system has not been able to keep up with Indonesia's increasing demands for high-level manpower. A recent World Bank appraisal (August 1980) predicted that each year from 1978 to 1990 Indonesia will require an additional 5,500 engineers, 1,900 scientists, 2,200 agriculturalists, 900 accountants and 1,300 economists. These requirements exceed present university output by 73 per cent in engineering, 74 per cent in sciences, 61 per cent in agriculture, 78 per cent in accountancy and 77 per cent in economics.

The number of institutions is no longer a major constraint. Improved and expanded physical facilities of existing institutions are still of major importance. As a greater percentage of the 19-24 age group seek

admission in future, the GOI will be hard pressed not to sacrifice quality for quantity goals.

Problems of access, productivity, and administration and staffing are the major constraints facing both public and private higher education. These will be examined below.

The Problem of Access

Two major economic and social forces are exerting strong pressures on higher education to educate more people more quickly:

1. More advanced levels of technical skills are required by the new technologies. An examination of the 1976 educational skill structure of several ASEAN countries shows that Indonesia's lags behind.

SKILL STRUCTURE OF THE LABOR FORCE, 1976
(Percent)

	Higher education	Secondary education	Primary education
Indonesia	0.7	9.3	90.0
Malaysia	1.8	25.8	72.4
Thailand	2.2	5.8	92.0
Korea	10.4	60.6	29.0
Philippines	12.0	18.0	70.0

Workers with primary education or less are abundant in Indonesia however, only 9.3 per cent of the labor force have achieved secondary education, and an even smaller 0.7 per cent of the total labor force have attained higher education.

The comparatively slow formation of high-level manpower in technical, scientific and managerial fields, in particular, has become a severe constraint on Indonesia's development activities. The acute shortage of manpower in these fields has hampered the efforts to staff government agencies and educational institutions. For example, in 1979, about one-third of the technical positions in the Department of Public Works had to be filled by underqualified technicians.

2. The rapidly growing numbers of graduates from the secondary schools are clamouring for further education and training, yet at present, the higher education system can accommodate only about two per cent of the 19-25 year age group. Focusing on this problem the GOI plans to increase the student population until 5 per cent of the 19-24 age group are enrolled by the year 2000. (This is a full 7 per cent below the target set in the UNESCO projections, reported in Part II, Secondary Education.) This expansion implies that the student population will increase at an average rate of 5 per cent to 6 per cent annually, with priority being given to development of the fields in which high-level

manpower is needed. This enrollment increase will be related to plans to improve productivity.

Each year the demand for entrance grows faster than available capacity and the access problem appears to be more acute. Figures for the private sector are not readily available but, in 1976, public universities could enroll only 35.7 per cent (35,875) of the 99,342 academic degree applicants. By 1980-81, the number of applicants nearly tripled to 290,004. Although 50,902 were admitted (an increase of 15,023 over 1974) the percentage of applicants enrolled dropped from 35.7 to 17.6 per cent.

Ratio of Accepted Students to Applicants.
By University Groups (1976-1980)

Group	1976			1980		
	A Apply	B Accepted	Ratio B of A	A Apply	B Accepted	Ratio B of A
I	58,882	12,987	22.0	147,824	13,012	8.8
II	10,981	7,269	66.2	51,293	12,154	23.7
III	9,709	6,603	68.0	25,090	11,459	45.6
IKIPs	19,770	8,647	43.7	65,797	14,295	21.7
Total	99,342	35,506	35.7	290,004	50,902	17.6

The table (above) shows the imbalance of access among four University groups. Major opportunities for access are still found in the relatively younger, smaller universities in groups II and III, most of which are located in the Outer Islands.

Universities within the above group classifications are identified below:

Group I (Mostly Java)	Group II (Mostly in West)	Group III (Mostly in East)	I K I Ps
1. Sumatra Utara	Syiah Kuala	Udayana	Jakarta
2. Indonesia	Sriwijaya	Mataram	Bandung
3. Padjadjaran	Andalas	Nusa Cendana	Semarang
4. Diponegoro	Jambi	L. Mangkurat	Yogyakarta
5. Gadjah Mada	Lampung	Mulawarman	Surabaya
6. Airlangga	Riau	Sam Ratulangi	Malang
7. Brawijaya	Jend. Sudirman	Pattimura	Medan
8. I T B	Sebelas Maret	Hasanuddin	Padang
9. I T S	Jember	Cendrawasih	Ujung Pandang
10. I P B	Palangka Raya	Halu Oleo	Manado
11. -	Tanjung Pura	Tadulako	-
12. -	Bengkulu	-	-

A system of national entrance examinations is being developed to screen out applicants of lesser academic capability and apply the selection process on a more equitable basis. Previously, an applicant had to take a separate test at each university to which he wanted to

apply. The cost of travel and per diem to the place of examination was often prohibitive. The National examination may now be taken closer to home. Results are sent to the universities to which the person wishes to apply. At present this examination varies somewhat according to regional cultural differences of the groupings shown in the preceding table.

In an effort to offer high school graduates further training in largely non-academic areas, the Ministry of Education and Culture has asked the Universities to greatly increase their efforts at the Diploma level. Through a crash program begun in 1979, new technical programs lasting from one to three years were organized in the fields of education, medicine, economics and engineering. These programs are largely terminal in nature but in some instances academic credits earned may be applied to a Sarjana 1 (or Bachelors-level) degree. From 1978 to 1980, access to such programs increased significantly. At each diploma level the percentage of students accepted, compared to the number of applicants, rose dramatically from 1978 to 1979 as knowledge of the new programs spread. They have levelled off, but absolute numbers of entrants will probably rise throughout the 1980's.

Ratio of Accepted to Applicants, 1978-1980

	1978			1979			1980		
	01	02	03	01	02	03	01	02	03
Applicants	4,413	2,770	3,337	15,828	3,585	12,440	20,307	11,232	14,320
Accepted	685	872	1,248	8,495	2,203	5,884	8,183	4,963	5,988
% Applicants Accepted	16	32	34	54	61	47	40	44	42

In terms of growth in enrollment and in output, the following tabulation is of interest.

	Growth in Enrollment				Growth in Output		
	'78	'79	'80	Total	'78	'80	%
01	-	3,640	7,478	11,118	1,069	10,140	845
02	-	387	1,325	1,712	1,269	6,169	386
03	-	1,589	1,814	3,403	2,902	10,987	279

Another very real constraint to improving access to higher education is the inadequacy of existing physical arrangements. Specialized facilities, even when used beyond planned capacity, generally are not sufficient to accommodate all students enrolled in a particular year. Consequently, some students have to wait for another year to be accepted into a course. For lack of facilities, certain faculties are forced to use existing, but inconvenient, facilities elsewhere. For example, civil engineering students at the University of Indonesia have to take practical laboratory work at the Institute of Technology at Bandung, about 190 km from Jakarta. The Science Faculty of the University of Andalas is situated within the campus of IKIP-Padang, occupying temporary buildings with inadequate space for teaching and laboratory work.

Balancing on a political tightrope, the DGHE has taken several steps to keep quantity of access and quality of performance in equilibrium. It has taken courageous stands on a number of issues backed up by the policy principle that increased growth and improved performance must go hand in hand. University leaders are charged with the responsibility of expanding their programs as rapidly as possible and as creatively as possible but not at the expense of quality improvement.

Provincial governments are urged to provide land for campus expansion as well as improved transportation and communication services, faculty housing arrangements and the like to increase access through improved facilities.

The GOI has signed several loans with the World Bank, The Asian Development Bank and USAID to develop campus plans, construct and equip priority buildings, upgrade staff and provide relevant commodities. It has also sought grant financing from other major bilateral donors to expand capacity and improve services.

Development budgets to support construction and infrastructure have been sharply increased. For example, in 1980-81 the GOI provided a special fund of US\$158.6 million for university infra-structure improvement as follows: library books and journals, \$15.8 million; laboratory and university press construction, \$16.6 million; printing equipment, \$126.2 million. These commodities are expected to support increased enrollments.

There are also problems of overcrowding and underutilization due to poor campus planning and class scheduling. Facilities have not been laid out according to a campus master plan. Consequently, sharing of facilities between departments is often curtailed. Many rooms and laboratories are built too small to accommodate enough students to allow for an efficient student:teacher ratio. Poor class scheduling has led to underutilization of existing facilities. Lecture rooms may be used only in the morning and laboratories only in the afternoon. Because many teaching staff are part-time and have their regular jobs in the morning, a large proportion of instruction takes place in the afternoon, leaving many facilities idle in the morning. The Faculties of Science and Engineering at the University of Gadjah Mada have reported that more than 55 per cent of the lecture rooms and 70 per cent of the laboratories are used less than half the available time.

The Problem of Productivity (Efficiency)

Productivity is usually defined as the ratio of actual time necessary to accomplish a task to the time officially designated for its completion. It is also thought of as the ratio of those who complete a task to those who started it. On both counts the productivity of Indonesian higher education is very low. The system is clogged with repeaters and hangers-on. Operational costs per student are exceedingly high. The flow of high level manpower through the higher education system is therefore expensive and inefficient.

In Indonesia educational productivity (efficiency) is roughly measured by the Directorate General of Higher Education (DGHE) as the ratio of graduates to the total enrollment for a specific (diploma) or academic degree. Hence, optimum productivity with no dropouts or repeaters would be:

<u>Post Secondary Course</u>	<u>Length</u>	<u>Ratio</u>	<u>University Course</u>	<u>Length</u>	<u>Ratio</u>
Diploma	1 yr.	100	Sarjana Muda	3 yrs.	33.3
	2 yr.	50	Sarjana (BS)	4 yrs.	25
	3 yr.	33.3	Sarjana 2 (MS)	2.5 yrs.	40
			Sarjana 3 (PhD)	3-4 yrs.	33.3-25

According to the latest information the actual productivity by groups of universities is:

	Sarjana Muda (Optimum 33.3)					Sarjana (Optimum 20)				
	1976	1977	1978	79-80	80-81	1976	1977	1978	79-80	80-81
Group I	18.2	17.8	17.8	19.9	4.8*	7.1	7.3	7.6	8.6	8.3
Group II	14.6	17.6	16.9	29.2	24.3	3.5	3.7	3.7	5.1	4.7
Group III	7.7	8.3	8.1	13.3	18.2	3.3	3.2	2.7	4.4	3.8
IKIP	12.2	9.6	11.6	21.8	19.4	2.0	1.8	2.2	5.0	5.5
Average	13.2	13.3	13.6	21.0	20.6**	4.0	4.0	4.0	5.8	5.6

*Most universities in Group I no longer grant a Sarjana Muda degree.

**Excludes Group I.

The above indicators are very rough since they do not consider the rapid increase in first-year students which would tend to skew the results on the low side. Neither do they show the role played by repeaters and dropouts.

Another productivity indicator based only on graduates is the average number of years it takes to complete a degree in comparison to the time normally required for completion.

	Sarjana Muda (3 yrs)		Sarjana (5 yrs)	
	1976	80-81	1976	80-81
Group I	5.4	5.6	8.8	8.0
Group II	5.1	5.4	8.9	8.7
Group III	5.4	5.1	8.7	8.5
IKIP	4.9	5.2	8.0	7.9

Neither set of indicators shows much progress during the five-year period. Low productivity is also attributed to high rates of failure. It has happened that 50 per cent of first-year students fail the final examination in a course. Until the credit system was introduced, anyone failing a subject could not advance to other courses until the failed subject was re-taken and passed. This forced many students to drop out. For instance, the proportion of the cohort of students that entered the University of Andalás in 1969 and finally graduated by 1979 was only 11

per cent in economics, 17 per cent in science, and 35 per cent in agriculture. Similarly, the proportion of students that entered the University of Gadjah Mada in 1968 and graduated in 1978 was only 18 per cent in biology, 25 per cent in engineering and 21 per cent in geography.

Improvements in productivity ratios have been noted in some areas by most institutions during the past ten years. The Institute of Technology, Bandung, reports that its productivity ratio has risen from 5.6 per cent to 7.1 per cent between 1973 and 1978, and that the average student now takes 5.5 to 6 years to complete the Sarjana program which ideally takes 4.5 to 5 years. The Institute of Technology, Surabaya, has reportedly also reduced its drop out rate from 70 per cent to 30 per cent and its productivity ratio has risen from 1.6 per cent to 8.3 per cent between 1973 and 1978. These improvements were accomplished through a combination of instituting a credit system of course requirements and an intensive staff development and visiting professor program.

Other factors contributing to low productivity and internal efficiency relate to the quality of students and staff.

Because the supply of teachers, textbooks, laboratories and facilities for secondary education has not keep pace with enrollment growth, there has been a general decline in the quality of secondary school graduates. Hence, as more and more demands are put on higher education to absorb greater numbers of these graduates, universities are faced with deteriorating quality of their raw material, particularly with respect to their knowledge of mathematics, the basic sciences, and English. A key factor which greatly influences the low productivity of the university system is the level of training of the trainers (teachers). Although still very low by international academic standards, considerable improvement in staff upgrading is shown from 1976 to 1980-81.

Number of Teaching Staff According to Degree

	1 9 7 6					Total	% Increase 1976-1980
	Diploma	Bachelor	Specialist	Master	PhD		
Group I	514	4998	293	655	292	6752	
Group II	397	2080	36	31	7	2551	
Group III	331	1612	-	48	11	2002	
IKIP	395	2216	1	58	31	2701	
Total	1637	10906	330	792	341	14006	
	1980-81					Total	% Increase 1976-1980
	Diploma	Bachelor	Specialist	Master	PhD	Total	% Increase 1976-1980
Group I	169	7060	431	958	554	9172	35.8
Group II	210	3061	60	98	13	3442	35.0
Group III	252	2470	5	133	39	2899	44.8
IKIP	414	3500	4	122	51	4091	51.4
Total	1045	16091	500	1311	657	19604	40

This increase in teaching qualifications is one factor that may be expected to have a positive influence on productivity.

Two other staff-related causes of failure, drop out and excessive time required for degree completion are worthy of note: insufficient student-contact time and poor quality instruction. Full-time staff often spend very little time teaching or tutoring students. Of the assigned weekly teaching load of 9-12 hours on average, only 3-6 hours may be devoted to actual instruction. This is largely due to inadequate university salaries, compelling most of the faculty members to hold other jobs. Staff sometimes take time off from work, without permission or penalty, to attend to their other jobs, or they neglect the routine teaching duties in favor of "project" duties which attract additional payment. It is therefore not uncommon that when a student is ready to write his thesis, the department chairman will be unable to find a faculty member to supervise him. The faculty member who does supervise a thesis may take 5 to 6 months to finish his reading because of their other commitments. As a result, students take one to two years to complete a thesis requirement that should require only six months.

More meaningful measures of productivity will be possible when the data base capability is strengthened so that the actual progress of individual students through the system may be plotted. Such improved capability is closely tied to the problem of university administration and management which plague both the public and private systems.

GOI Efforts. At the 1980 OGHE National Rectors' Meeting, programs of study were modified significantly in an effort to improve productivity, create a more equitable and common basis for study throughout the system, and bring the system into line with recognized international standards. The following steps were taken:

- The 3 year Sarjana Muda degree was abolished.
- The 5 year Sarjana was reduced to 4 years.
- The skripsi or term paper requirement for the Sarjana degree was made optional.
- Programs of study were re-evaluated by the subject area consortia.
- A system of credit hours was established and credits were assigned to individual course and academic degree offerings.
- Universities were given five years to plan and adopt the credit system and integrate the Sarjana Muda into the new Sarjana program.
- Progress towards a degree was put on an individual course basis. It was agreed that certain diploma-level courses could be accepted as credits in degree-granting programs.

AID Assistance. Technical assistance and training provided through USAID projects have been focused on increasing productivity. Long and short-term technical assistance was supplied for the study of credit

systems and their application to the Indonesian system. A MUCIA advisor served as a resource person to the DGHE during final preparation, presentation, discussion and adoption of the productivity issues addressed at the 1980 Rector's Conference.

In a more general way, AID Projects have made small but effective improvements in the learning environment of many universities through selected commodity procurement, staff upgrading, providing experts for DGHE workshops and almost daily consultation with long-term advisors and members of the USAID Education staff.

The Problem of Administration and Staffing

Administration of the rapidly growing centralized higher education system requires more specialized personnel on a full-time basis than are available. In short supply are individuals who have learned effective planning, budgeting and accounting practices, commodity procurement, laboratory management and maintenance of buildings and grounds.

The DGHE urgently needs a high level "senior staff" type degree granting institution to focus on all aspects of university management and decision making. Such an institution would train administrators in many phases of university policy, planning, management and implementation required by both the public and private systems. Currently, no IKIP or school of public administration focuses on the diverse needs of educational administration, nor does Indonesia have a graduate school of business administration for systematic teaching of management skills and procedures.

Most of the problems discussed in this assessment are management-related, such as the recruitment and deployment of staff, their training and effective supervision, and the efficient use of facilities. The problems of low output and poor quality are further intensified by inadequate management capacity at both the central DGHE level (system management) and local university level (institutional management).

The existing university management structure suffers from three important weaknesses: limited skill and lack of continuity among managers, poor coordination among faculties and subject departments and absence of systems to provide needed performance data. First, the rectors, assistant rectors and deans who administer universities are generally seconded from regular academic staff and hold office for a limited period. They are expected to carry modified teaching loads in addition to their administrative duties. Rectors and deans are changed every four and two years respectively, and the continuity in administration is disrupted. Such staff need training in preparation for their duties and also need full-time, professional assistance in order to function efficiently. This points to the need for a cadre of permanent, professional managers who will provide a means of organizing and managing university resources (e.g., teaching accommodations, examinations, student records, personnel, physical facilities, management information) and provide that element of continuity and consistency in the development and implementation of university policy which is lacking at present.

Second, the excessive autonomy of faculties and subject departments has disadvantages in terms of duplication of services, inconsistencies in academic and administrative standards, and inefficient use of resources. This underscores the need for rationalization of services managed by a professional cadre. Finally, universities lack management information systems to monitor and evaluate the implementation of different policy measures and to feed information into a central system at the DGHE level.

One of the biggest drawbacks to a serious discussion of Indonesian higher education is the virtual absence of consistent, comprehensive and reliable information. No one can say with certainty how many students there are, what sex and age brackets they represent, what fields they study, how many graduate and where they find jobs, how many academic staff there are and what their level of training is, how much research is being undertaken, and so on. There is near total absence of reliable information on university finance.

The Directorate General of Higher Education is responsible for formulating policies, developing plans, coordinating curriculum development and measuring the efficiency of execution of policies and plans. The effectiveness of the DGHE is, however, constrained by two problems: The absence of a permanent cadre of professional "career" staff, and the lack of cohesive fully-developed systems for monitoring, evaluation and management-information data collection. Management positions at DGHE are mainly filled with seconded university staff who are not at the start of their assignments experienced in management and planning on a system level. Moreover, the management information system for the collection, analysis and distribution of comparative indicators (e.g., progression, dropout and repetition rates) for all universities is still in the formative stage. Systems for monitoring and evaluating university operations are also needed to provide basic information concerning how national policies are implemented. Further development of such systems along with the appointment of career personnel, including university rectors, would strengthen the DGHE's capacity to improve and provide leadership to Indonesia's public and private university systems.

GOI Efforts. The Basic Policy for Higher Education was established by decree in 1975. During the next two years the DGHE further defined the policy and began its implementation. In 1977, the newly appointed Director General of Higher Education, Doddy Tisna Amidjaja published a major paper (with S. Sapiie) describing the philosophy underlining the policy. The paper is aptly titled, "From Random Growth to a National System." It stresses the need for systematic planning involving all public and private sector university rectors and leaders towards national goals. Several directions are clearly set forth:

- National control to establish policy.
- Encouragement of private institutions to develop within national policy guidelines.
- Regional access and equity and direct involvement of provincial governments.

- Involvement of foreign donors to support higher educational development.
- Improved funding through increased budgets, justified by the adoption of the Program, Planning, Budgeting System (PPBS) to control budgets and expenditures.
- Utilization of scarce resources through inter-university networks to cooperate on common problems.
- Standardization of basic structure along academic discipline lines which leave options for adjustment to local needs.
- Mobilization of broad public and private resources in support of modernization and effective use of new developments in science and technology.
- Direct involvement with affairs of society as an agent of development.
- Adoption of teaching, research and public service as the three major responsibilities of higher education.

Special task forces met for several years to give further substance to the Basic Policy for Higher Education. Results of their deliberations were published in 1980 as Indonesian Government Regulation Number 5 entitled, "Principles On the Organization of State-Run Universities and Institutes." This is a very thorough document which clearly defines the structure of universities at every organizational level. Combined with previous decrees and regulations it clearly establishes the base for development of both public and private universities and sets targets to be met by 1985.

Teacher work load is set at nine to twelve credit hours per week of direct teaching, and 3 credit hours are to be devoted to research and public service activities. Administration and management activities are limited to only 4 or 5 per cent of the full-time faculty load. Staff are to be evaluated each year. Student study load is set at 18 credit hours per week per 16 week semester. Class size is set at 22 persons for laboratory study and 30 for academics. Student evaluation must be based on at least mid-term and final examinations. Students may repeat courses only twice. The student is put on probation if he fails 2/3 of his credits in any single semester. Suspension is automatic if he fails 50 per cent of his credit load while under probation. Financial aid will be given to 10 per cent of the students to improve access. Instructional improvements include the requirement that detailed course outlines must be prepared and approved and that textbooks and reference materials will be assigned in every course.

Decrees and regulations are essential to establish bases and set targets. However, they do not teach the thousands of administrators and teachers how to comply with the requirements. For example, as already noted, Government regulations provide that GOI budgets and disbursements are to be based on the PPBS. While the officials charged with allocation

and disbursement of funds know and understand this system, hardly anyone else with leadership responsibilities in the ministries and at provincial levels does. One result of this lack of understanding is that seven years after the PPBS policy was established, funds trickle rather than flow to intended recipients. Planning and accounting procedures simply are not yet in place to permit the system to work as it should.

Realizing the need for a systematic approach to interpret and implement Government policies and regulations, the DGHE intends that all public institutions of higher education improve and expand their programs in a sequence of steps: planning, preparation, implementation and evaluation. The whole sequence will take about ten years. The planning stage, lasting one to two years, will prepare academic and physical master plans; the preparatory stage, lasting one to two years, will develop management and organization frameworks, staff development programs and architectural planning. The implementation stage and the evaluation stage will last five years and two years, respectively.

The DGHE has also given much thought to the establishment of a "Senior Staff" college along the lines mentioned earlier in this paper. Bandung has been mentioned as a permanent site. A real constraint to this project seems to revolve around debate as to whether an American or European philosophy should predominate. Top leadership has converts to each system since most are "overseas" graduates. As the Duddy-Sapie report outlined, the GOI has adopted the tri-partite philosophy of teaching, research and public service as a framework by which Government universities shall organize their total program. Adoption of this philosophy is due in large part to the influence of the U.S. Land-Grant Colleges, on whose campuses many Indonesian educators have studied. The GOI has also adopted the U.S. credit system and the concept of postgraduate degrees based on research and study under the guidance of major professors, rather than the European and Australian system of independent research. However, the Indonesian leadership wants to avoid any implication that the higher education system, and hence the training of high-level manpower, is unduly dependent on, or placed too heavily under, the influence of any single foreign country.

Foreign assistance has been requested by the GOI to help with the further development of its universities. The Asian Development Bank has a project with Hasanuddin University (UNHAS) in Sulawesi and the University of Northern Sumatra (USU). The thrust of these programs is in campus and staff development. Australia is helping with the experimental farm and animal science research at IPB. Japan is involved with fisheries and with food processing at IPB, and has constructed and equipped a major forestry research center at Mulawarman University (UNMUL) in Kalimantan.

The World Bank (IBRO) is funding two major university projects. One focuses on secondary teacher training and is administered through the IKIPs. The second is concerned with university system management through the DGHE, and with increased input/output in the priority fields of engineering, science, agriculture and economics at the Universities of Indonesia, Gadjah Mada, and Andalas. The latter, funded with a \$45 million loan, covers ten years of assistance beginning in 1980. It is

divided into two sequential phases. In the first phase (1980 to 1984) the Universities of Indonesia, Gadjah Mada and Andalas will develop complete academic, organizational and physical master plans for their expansion. The DGHE will also be strengthened in its capacity to collect data and manage universities as a system.

In the second phase of the program, (1984 to 1990), policy and staff development measures prepared in the three universities will be adopted on a sequential schedule throughout the university system. Also in the second phase, the physical facilities for the selected faculties will be constructed and equipped for the Universities of Indonesia and Andalas at their new campus sites and for Gadjah Mada at the present campus site.

Specific IBRD targets which will directly assist system management of the DGHE are to:

- Introduce policies to improve student flow and output over the short and medium terms.
- Develop monitoring, evaluation and management information systems.
- Establish a development office in the DGHE.
- Introduce a university management training program.
- Rationalize university administrative organization and staffing.

AID Assistance. AID currently has five projects in higher education: Agriculture Education for Development (AED) - (1971 to 1983); Higher Education for Development Training (HEDT) - (1976 to 1984); Eastern Islands Agriculture Education (EIAE) - (1979 to 1984); Graduate Agricultural School (GAS) - (1979 to 1984) and Western Universities Agricultural Education (WUAE) - (1980 to 1986). All give some attention to staff and curriculum development, institution-building and management improvement. The AED project was largely responsible for the Land Grant College philosophy of teaching, research and public service being adopted. Both the AED and HEDT projects supported adoption of the credit system. All projects have added some form of administrative and practical experience to the MS and PhD training of over 400 participants

The Graduate Agriculture School project with IPB stresses the development of a university management-information system. The use of both small and large computers is being tested. Procedures for the application of data required for academic planning are being utilized by each dean and department head in determining short and long range plans.

The Problem of Private
Institutions of Higher Education

Three hundred twenty-five privately owned and operated higher educational institutions enroll over one-third (36 per cent) of all tertiary-level students. The large numbers of schools, diversity of programs and different demands of interest groups served by the private sector greatly affect efforts to achieve quality and meet government standards. The private institutions include 62 universities, 69 higher schools and 194 institutes and academies. Many are supported by religious groups, others by various government agencies.

Private sector schools are constrained by the same problems of access, productivity, administration and staffing which plague the public sector. They have to meet not only DGHE operational standards but also serve the widely divergent purposes of their various sponsors.

However, these schools play an important and very necessary role in Indonesia's development, because the demand for high level manpower cannot be met by government resources alone. Costs are too high to be totally supported by national and provincial governments. As the GOI is nearing its political goal of providing each province with a government institution of higher learning, its financial and manpower resources are being stretched tightly. The private sector offers additional sources of revenue and greater administrative flexibility in meeting educational needs at the tertiary level.

The GOI's "Basic Policy on Higher Learning Development" clearly recognizes the important role of private institutions and provides a basis for stimulating their growth. In 1974, a Directorate for Private Universities was added to the DGHE. The director named to head this organization has rank and responsibility equal to the other three directors for academic affairs, research and public services, and student affairs. Work of all four directorates is closely coordinated.

The first meeting between government and leaders of private university foundations from all over Indonesia was held during July, 1975 at Cibogo, Bogor. At this meeting it was established that graduates of the academic programs must pass the national examination administered to all public and private students. Supervision of private universities was made the responsibility of seven geographic "Kopertis" (offices) under the DGHE director.

The officially-listed 325 private institutions run the range from large and prestigious Islamic universities and the Banking Institute (LPPPI, operated by the Indonesian Banking Association) to little more than store-front operations. New institutions keep cropping up as a particular group feels the need. Often such entities are formed without the knowledge of the Directorate and without adhering to the requisites for registration. Because of the variety and geographic spread of private institutions, planning and evaluation are even more difficult than in the public sector.

The Director of Private Universities estimates that productivity in 1978 was 2 per cent, based on 2,800 graduates. The goal for 1983 is 3.5 per cent, with about 6,700 students passing their national examinations and graduating.

Personnel needs are expected to increase from 3,000 to 5,000 full-time permanent staff and from 10,000 to 14,700 part-time instructors by 1983.

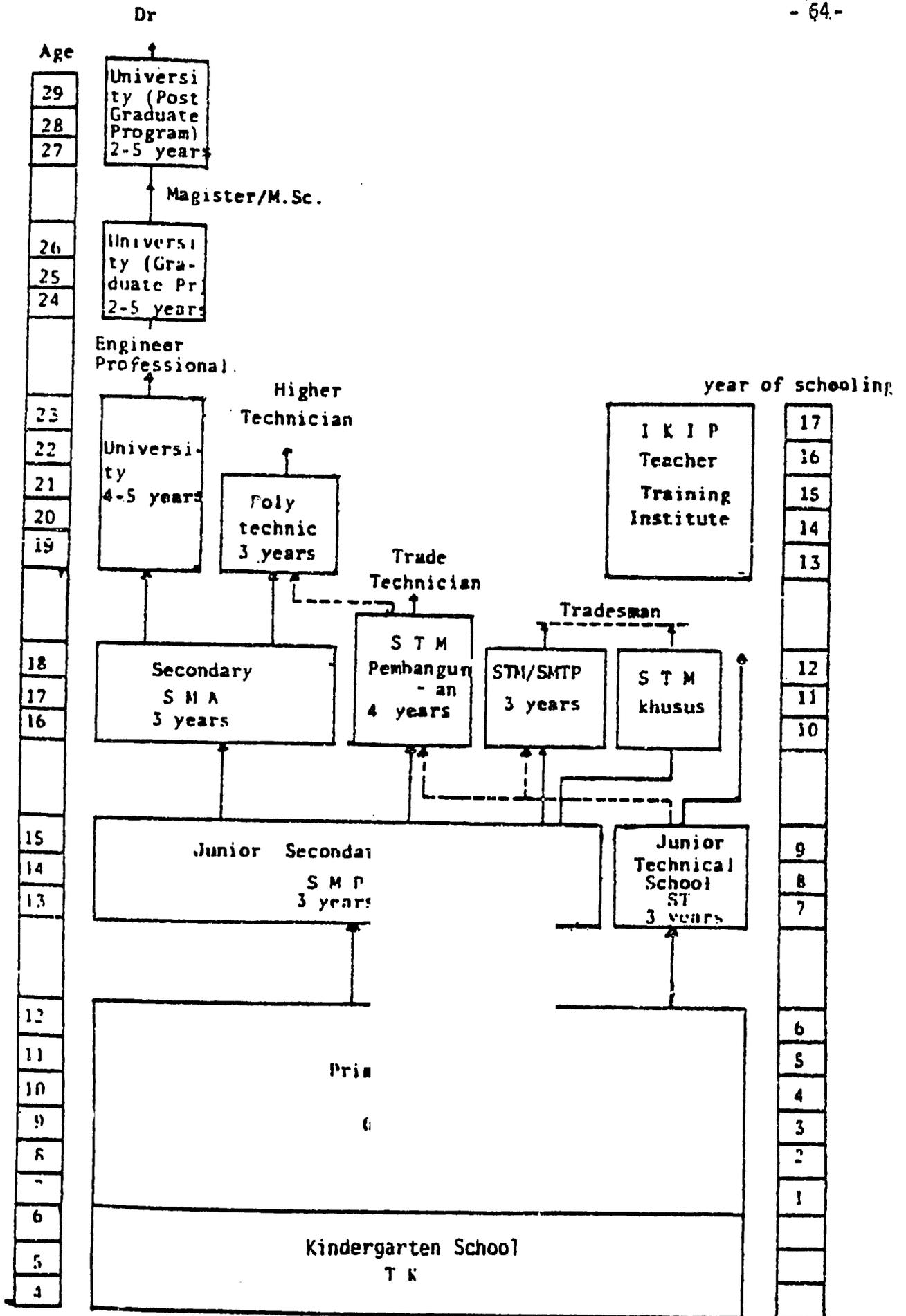
Application for admission increases at about 6 per cent annually. There were 68,900 applications in 1978. By the end of Pelita III in 1983, it is estimated that applications will increase to about 90,000. Given present capacity constraints, the DGHE estimates that total enrollments may increase by about 7 per cent annually, reaching a capacity of 192,000 by 1983. Some 60 per cent of those enrolled are expected to be in academic programs.

Administratively, there is a strong effort to merge many smaller schools to increase cost efficiency.

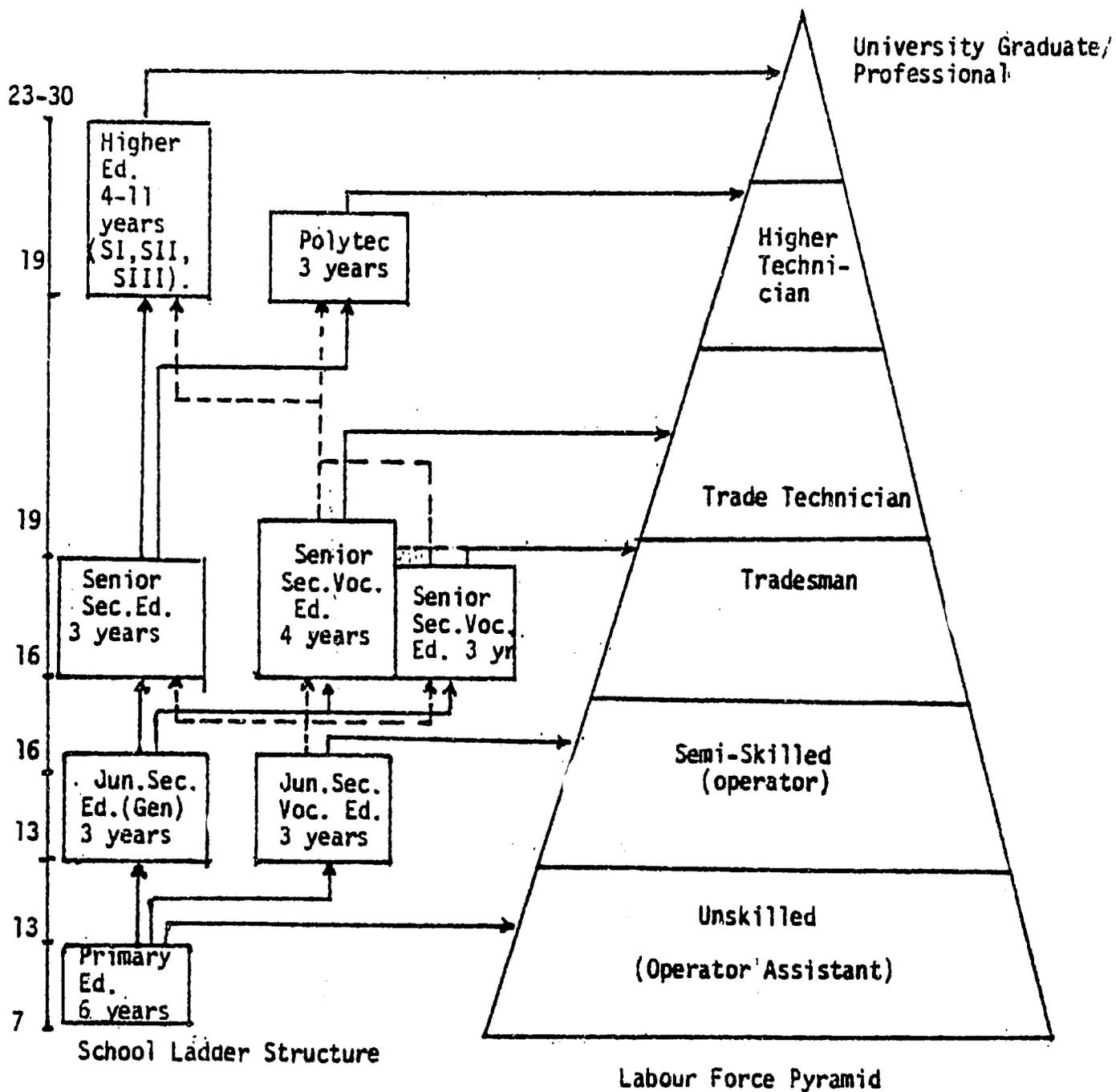
-63-

APPENDIX

Indonesian Educational Structure



Ladder Structure of School Types and the Labor Force Pyramid



Post-Secondary/Tertiary Educational Institutions in Departments Other than MOE

Department	Institutions	Year of study
1. Trade.	1. Academy of Trade	3 years
	2. Academy of Metrology	3 "
2. Industry	1. Academy of Business Management	3 "
	2. Academy of Chemical Analyses	3 "
	3. Academy of Leather Industry	3 "
	4. Academy of Technical Industry	3 "
	5. College of Industrial Management	2 "
	6. Institute of Textile Industry.	5 "
3. Communication	1. Academy of Meteorology and Geophysics	3 "
4. Health	1. Academy of Health Supervision	3 "
	2. Academy of Anaesthetics	3 "
	3. Academy of Rontgen Technology	3 "
	4. Academy of Nursery	3 "
	5. Academy of Physiotherapy	3 "
5. Social Affairs	1. College of Social Welfare	3 "
6. Justice	1. Academy of Immigration	3 years (pending)
	2. Academy of Socialization (of Prisoners).	3 years (pending)

Public Institutions of Higher Learning: Number of Academic Staff According to Degree Obtained

Academic Degree	1979/1980			1980/1981			1981/1982		
	Number in Public Inst.	Faculty of Physics	Technology	Number in Public Inst.	Faculty of Physics	Technology	Number in Public Inst.	Faculty of Physics	Technology
1. SARJANA MUDA	-	-	-	1.226	16	138	341	26	62
2. SARJANA	14.639	851	1.312	16.808	862	1.343	19.153	940	1.473
3. DOKTOR	418	61	47	473	67	49	691	98	81
4. MASTER'S ETC.	283	33	33	296*	34	34	105	0	6
T O T A L	15.340	945	1.392	18.803	979	1.564	21.290	1.064	1.622

* Including 16 senior High School graduated instructors of the Surakarta Academy of Dance Arts.