KOBE ECONOMIC & BUSINESS REVIEW

8th ANNUAL REPORT

The Industrial System
and
Industrial Education
in Southeast Asia

THE RESEARCH INSTITUTE FOR
ECONOMICS AND BUSINESS ADMINISTRATION
KOBE UNIVERSITY

1961

KOBE ECONOMIC & BUSINESS REVIEW

8th ANNUAL REPORT

The Industrial System
and
Industrial Education
in Southeast Asia

THE RESEARCH INSTITUTE FOR
ECONOMICS AND BUSINESS ADMINISTRATION
KOBE UNIVERSITY
1961

Acknowledgment

I thank very much for the kindness of the Asia Foundation and the Institute of Democratic Education which assisted us to pursue this study. The former gave me the travel grant for the observation on the actual condition of the commercial and industrial education in South and Southeast Asian countries in winter, 1958. In the same year the latter gave the subsidy to the study group of the Research Institute for Economics and Business Administration of the Kobe University represented by me for the study on the same theme. Without the kind assistance from these organizations mentioned above, this study could not have been accompolished in this form.

Tadao Miyashita

CONTENTS

CHAPTER I

The Industrial System and Industrial Education in Southeast Asia now on the Threshold of Reform; and Japan's Position therein

KIYOZO MIYATA

1

World War II had brought about great changes in the political and economic aspects of the world, of which one of the most significant is the fact that a considerable number of the colonies up to the end of the war had been liberated and achieved their independence. When we confine our observations to Southeast Asia, it may be noted that most of these countries had been emancipated from the yoke of many years of colonial or semi-colonial rule. As a consequence, a new path was opened for them by which they have been enabled to pursue a fully independent economic policy by liquidating their former status of colonial economy. This very fact had brought a great change in the industrial policy of the former suzerain countries. At the same time it has exerted a tremendous influence upon them in bringing about a fundamental change in the industrial system of the Southeast Asian countries.

In the first place, the former suzerain countries, which are industrially developed capitalistic countries, had prevented their former colonies from achieving modern industrialization and had kept them as the sources of supply for raw materials and agricultural produce and as markets for their manufactured products. But since the war these advanced countries are bound to cooperate with the new independent countries in their endeavors to realize modern industrialization.

In the second place, the Southeast Asian countries are endeavoring to

establish a new economic and industrial structure by securing the economic cooperation of the industrially developed countries ever since they grasped the possibility of achieving an independent economic system, and in order to realize modern industrialization by cutting off their former ties of colonial and subordinate economy.

In the third place, viewed from the standpoint of Japan, this country has long maintained, on the one hand, a mutually complementary relationship with the Southeast Asian countries as suppliers of light-industrial consumer goods and as buyers of agricultural produce and raw materials, on the other hand. But in the future, when these countries start on the path of economic developments and industrialization, they require the aid and cooperation of the industrially developed countries with the capital, capital goods, and administrative and technical guidance. Thus the countries of Southeast Asia will enter into a new complementary relationship with Japan.

With the vicissitudes of time a new situation centering around the Southeast Asian countries is emerging, and for these countries in particular, it has the significance of bringing about a fundamental change in their industrial system and organization. As a consequence, these changes call forth for the needs of fundamental reform in industrial education. At this juncture, Japan may be said to stand in a position of being able to extend special aid and cooperation in the basic reorganization of the Southeast Asian countries; and, in its turn, in the reform of industrial education, which is the necessary condition for its realization.

2. Emancipation from Colonial Industrial Status

Prior to World War II the special characteristics of industrial economy of the Southeast Asian countries may be said to have consisted in the fact that they had been under the domination of the colonial economy of the western European countries and of the United States of America.

First, the outstanding fact is that the economy of these countries had the position of "subordinate economy" towards the suzerain countries. The former colonies had been the sources of supply for foodstuffs and industrial raw materials to the ruling countries, and also the markets for the manufactured products of the suzerain countries. Hence their colonial policy could not tolerate the establishment of modern industries in the erstwhile colonies, despite the fact that they had an abundant supply of raw materials and of cheap labor. Moreover, their basic industrial structure was centered chiefly in the production of foodstuffs and industrial raw materials.

And, in turn, also their trading organization had the characteristics of exports of foodstuffs and industrial raw materials and imports of industrial products.

Secondly, besides the fact that their industrial structure was confined to production of a few kinds of the primary products, it had the additional characteristics of underdeveloped economy of a "monoculture" type.

Thirdly, these two characteristics gave rise to further characteristics of disequilibrium and instability in the industrial and trade structures of the Southeast Asian economy. As a consequence, there was a lack of stability as a result of receiving directly the effects of fluctuations in the international markets.

Fourthly, the poverty and the low standard of living of the people have resulted from the above mentioned characteristics.

Against such a background, then, what characteristics did their industrial education possess? First of all, in order to cope with the colonial industrial system, the industrial education of the Southeast Asian countries may be said to have formed a link in the colonial policy with the objective of the maintenance of the relationship of the dominant races to the subject races. Moreover, because of the fact that many of the leaders in the economic, industrial and technical fields had been recruited from among the ruling countries, the industrial and technical education of the indigenous peoples may be said to have consisted in the training of those who were under the employ of the ruling races. In the second place, as opposed to the industrial structure of the pre-modern and less-developed countries, industrial education of the indigenous peoples had, as its principal aim, the education of a pre-modern type of agriculture, acquisition of raw materials for the industries and education of the employees of medium and small-scale commercial firms.

Since the end of World War II, however, the Southeast Asian countries had been emancipated from the yoke of the colonial rule and had achieved autonomy and independence; and, as a result, they had undergone a change into an autonomous economic structure, and they have began to forge ahead towards economic developments and modern industrialization, which have so far been stifled. Viewing the situation from external postulates of economic structure, they have now been enabled to make a free choice of the most suitable kinds, scale and methods in the administration of their industries by themselves. And in order to cope with the situation, they were impelled to make a complete change to the training of administrators and technicians in economic developments and industrialization as the

objective. The liberated independent countries must perforce prepare themselves for industrial reform in order to train a new type of administrators and technicians.

3. Japan's Position towards the Southeast Asian Countries

(1) However, viewed from the perspective of the change of times, some fifteen years since the end of the war, the Southeast Asian countries have not as yet shown the developments expected of them in the modernization of their industries. As a consequence, they are still in the stage of development with an undeveloped type of industrial structure. To be sure, in the early period of the years following the end of the war, these countries had formulated plans for modern industrialization with much enthusiasm. Taking advantage of the political liberation by leaps and bounds as a reaction to the notion that modern industrialization had been forcibly restrained by the colonial policies of the past. In their efforts to realize their long cherished hope they were aided by the accelerated conditions of a new nationalism, which came to the fore in the years following the war's end. It was impossible, however, for them to achieve modern industrialization at a stroke for the erstwhile modern less-developed type of economy, which had long been under the domination of colonial economy without an adequate fulfillment of the essential conditions. When one takes a realistic view of the situation, it will be noted that most of these countries had failed to attain their objective in modern industrialization in the early period after the end of the war. But they are now ready to launch on a fresh start in order to effect modernization of their under-developed economy. From their experience of failure in the past they were able to comprehend that a number of prerequisite conditions must be fulfilled beforehand. Among these prerequisite conditions, there is, on the one hand, the new industrial environment; and they realize that there are physical conditions, such as adjustments and replenishments of enterprise environments. At the same time, there are on the score of the requisite conditions of personnel, the new industrial structure has its significance in the education of new administrators and technicians who must conform to the industrial structure, on the other hand. Moreover, when one takes a long range view of the situation, it will be necessary for them to promote a new industrial education that will be a worthy and fruitful one in order to have the new industrial set-up well grounded.

(2) Another reason why the Southeast Asian countries are still unable

to achieve sufficient results in modern industrialization after their liberation is to be sought in the fact that they are unable to solve the basic problems of modern industrialization and fulfill the prerequisite conditions with their own strength. That is to say, because they are less-developed countries they are unable to extricate themselves from their retarded growth with the consequence that there lies the contradiction of the inability of these countries to consummate the great task of effecting reform in the industrial structure and organization with their own inherent strength. It may be attributed to the poverty and to the very fact of the difficulties, which confront them in the accumulation of capital simply because they are less-developed. These, then, are the circumstances that lie in the path of the economic development and modernization, i.e., the enhancement in the level of production and the attainment of a high degree of development of the industrial structure —— freedom from poverty and the circumstances that are retarding the development of the rise in the standard of living. In order to resolve the contradiction, which their under-developed economy contain, economic aids and cooperation from the industrially developed countries are required. Besides these under-developed countries require introduction of foreign capital and imports of capital goods, which are so necessary for their economic development and modern industrialization. Further it is necessary for them to obtain administrative and technical guidance in order to meet the requirements of modern industries. But if one takes a long range view of the situation, it will be noted that further carrying out into effect of the administrative and technical education with the cooperation of modern industrialists of developed countries is necessary. In a word, in order that these Southeast Asian countries might be enabled to establish a modern autonomous industrial structure, it will require the aids and cooperation of the industrially developed countries so as to enable them to achieve establishment and development of industrial education on a long-range basis as the prerequisite condition.

(3) Upon entering into economic development and modern industrialization by the Southeast Asian countries as independent nation, among the contents of the economic aid and cooperation as have been enumerated above, as regards the last point, namely, industrial education, Japan holds a unique position among the industrially developed countries as it holds a most advantageous position. Among many of these so-called advanced countries which are in a position to extend aid for the development of the Southeast Asian countries Japan holds a position of comparatively less-

developed country. As compared with the economy of the United Kingdom, the United States of America, France, Germany and other industrially developed countries the period of the advent of capitalism, namely, viewed from the time when modern industrialization had began, and again from the standpoint of the level of development in the economic structure, Japan stands at a comparatively low stage of development. But, as compared with the various countries of Asia and of South America, Japan possessis the position of an advanced country viewed from the beginning of the industrialization and in the level of development at the present stage. Accordingly, Japan occupies, on the one hand, a position of a less advanced country as compared with the more advanced countries and on the other that of an advanced country as compared with less developed countries in Asia and Africa. Thus Japan is standing on a medium stage of development between the two groups of countries. Japan's economy has the characteristics of "midway" capitalism. Moreover considered from the national income and consequently from the high level of the standard of living, Japan stands at a medium stage of development in the world economy. Viewed further from the standpoint of industrial organization, medium and small-scale industries of Japan occupy an overwhelmingly large proportion of their enterprises. Considered also from the viewpoint of the structure of employment, the number of paid laborers comprises less than 50 per cent while the aggregate family workers and self-imployed comprise 50 per cent. It is to be noted further that large, modern commercial and industrial enterprises have made much headway in development, but on the other hand, it may be clearly understood that Japan's industrial economy has twin-characteristics of a dual structure.

When the Southeast Asian countries start afresh on their career of modern industrialization and of carrying out their plans of reorganization of their industrial structure and when they attempt to create the structure of the enterprises and their administration that will conform to the new industrial organization, the country which will be in a position to proffer them with a most useful guidance, which may prove to afford a lesson to them actually may be said to be Japan among the various industrially developed countries. These Asian countries are most zealous to know how rapidly Japan has achieved a high level of developments by divesting itself of its feudalistic vestiges during these several tens of years. When thus viewed it may be said that among the economic aids extended the Southeast Asian countries, the administrative and technical guidance in agricultural manage-

ment and in the administration of medium and small-scale enterprises, and further in retrospect of the very problem of education of the administrators and technicians, it may well be said that Japan is placed in a special position among the industrially developed countries as it possesses especially advantageous characteristics.

Lastly, what should be noted in particular in considering the question of the economic aid and cooperation of Japan to the Southeast Asian countries concretely is the fact that Japan is at present fulfilling the payments of reparations to these countries. In reviewing the history of the reparations payments it may be noted that the reparations payments from Japan have a unique character of payments from an industrially developed country to undeveloped agricultural countries—Burma, the Philippines, Indonesia—and Vietnam—which are the four countries now receiving reparations from Japan, had all been liberated from colonial rule, and they are starting afresh on the path of modern industrialization. Despite the fact that these countries are in a position of receiving aids from the industrially developed countries in order to achieve modern industrialization by all means. But as a contradiction in the economy of the under-developed countries as aforementioned, they are placed in a position of receiving aid from the industrially developed countries in capital, capital goods, administrative and technical guidance, etc. for their economic development as the prerequisite. Under such circumstances, these countries are receiving aids from abroad, which are required for their modern industrialization and economic development, and the reparations payments from Japan.

Indeed, it may be said that for Japan, which is an industrially developed country, to cooperate with them by supplying them with capital goods and administrative and technical aids, which the four Southeast Asian countries require in order to achieve modern industrialization, will be a most appropriate and necessary means, viewed from the organizational relationship, which the Asian economy possesses. In this relationship the industries of Japan and those of the four Southeast Asian countries stand in a position of a new complementary relationship; that is to say, even if there were no reparations payments between Japan and these four countries, viewed in the light of historical perspective, there will be a natural demands in the future to promote mutually complementary relationship between an industrially developed country and the four countries which are forging ahead on the path of modern industrialization. Now that by chance the implementation of the reparations payments has opened the first window to the

natural path that is pregnant with promise for the future. And thus the question of the reparations payments from Japan to the four Southeast Asian countries and, closely connected to it, there is the question of economic aid and cooperation as a link, namely, the offer of administrative and technical guidance, aside from the work of education of the administrators and technicians in the four respective countries, come to the fore. What these countries are receiving and what they consider to be most advantageous to them actually in their economic and modern industrialization are the management of enterprises and the techniques to be furnished by Japan. When one takes a long range view of the situation, in retrospect, there is the education of the administrators and technicians. Thus the offer of the reparations payments together with the guidance of industrial enterprisers and the education of those who will be entrusted with the task as the contents, the fact remains that a wedge has been driven for the construction of economic cooperation between these four countries and Japan so that the reparations payments may be said to turn a misfortune into a blessing.

CHAPTER II

Industrial Structure and Educational System in India

—— Industrial Structure and Industrial Education in India (1) ——

TADAO MIYASHITA

1. Industrial Structure in India

As India is a country which has an immense population and abundant natural resources, she has a possibility of a great economic development in future. However, at the present time her economic development lags far behind other nations and India may be said to be an under-developed country. The transplantation of modern industries upon Indian soil by Britain began in the 1860's, and the history of industrialization of India has already reached over a hundred years, and since the closing years of the nineteenth century India had witnessed the birth and growth of her nationalistic capital. Nevertheless India cannot find her way out of the stage of an economically under-developed country. There are many reasons why India stands in such a stage, but the influence of the political and exploitation policy in this region which had been pursued by Great Britain for so many years and the traditional, social and economic system and usage are the most important among them.

Since India achieved her independence in August, 1947, she has been exerting her efforts toward democratization and economic construction of the country. As a result, her national income had shown an increase of approximately 10% during a period from 1948-49 to 1954-55. But the rate of the increase of the per capita annual income is exceedingly small during the same period (refer to Table No. 1).

Table No. 1 National and Per Capita Incomes (1948-49 to 1955-56)

Year	National Income (in million rupees)		Per Capita Income (in rupees)	
	at Current Prices	at 1948-49 Prices	at Current Prices	at 1948-49 Prices
1948-49	86,500	86,500	246.9	246.9
1949-50	90,100	88,200	253.9	248.6
1950-51	95,300	88,500	265.2	246.3
1951-52	99,700	91,000	274.0	250.1
1952-53	98,200	94,600	266.4	256.6
1953-54	104,800	100,300	280.7	268.7
1954-55	96,200	102,800	254.4	271.9
1955-56*	96,500	104,200	252.0	272.1

* preliminary
Source: "India, A Reference Annual," 1958, p. 188.

How low is the per capita income of India in comparison with those of other countries may be seen in Table No. 2.

Table No. 2 International Comparison of Per Capita Income (in rupees)

Country	1949	1955
India	255	252
Australia	3,070	4,913
Canada	4,210	6,356
France	2,280	3,910
Japan	480	1,009
United Kingdom	2,700	3,983
United States	6,970	9,335

Source: P. A. Wadia and K. T. Merchant, "Our Economic Problem", 1957, p. 753.

In India similar to the situation prevailing in other under-developed countries, the disparity between the poor and rich is exceedingly great. A small number of the rich is living a luxurious life that may be said to vie with royalty in splendor, but the mass of the people have long suffered from hunger and malnutrition.

The writer has made an analytical study of this problem from the view-point of the sustenance capacity for Indian population (refer to the writer's "Views on the Population Problem of India", "The Pacific Problems," December, 1958 and January 1959 in Japanese). No attempt will be made to go further into the matter here, but the writer will merely point out that the dire poverty of India mentioned above has a close relationship with the industrial structure of the country.

India is as yet an agricultural country. According to the population census of India for 1951, out of the total population of India of 356,600,000 persons, 82.7% lived in rural districts while 17.3% lived in cities and towns. According to the same census, 69.82% of the population of India inclusive of dependents were engaged in agriculture; while 71.8% of the labor power of India, comprising 143,200,000 persons, lived in rural districts. In the national income of India for 1954-55 agriculture occupied 68.67%.

As against the above figures, the relative importance of modern industries in Indian national economy is exceedingly small. According to the census of India for 1951 the labor power diverted toward modern industrial enterprises was barely 2.1% of the total labor power of India and the modern industries contributed no more than 12.18% of the national income of India.

Noteworthy is the important role played by small scale industries. According to the census of 1951, 8% of the labor power of the country was engaged in small-scale industries, which contributed 15.58% of the national income of India in 1954-55, and that this exceeded the 12.18% of the national income contributed by the modern industries.

The foregoing facts may be seen by a glance at tables No.3 to 5 which

The table No. 3 Distribution of Population by Livelihood Pattern (1951)

Occupation	Population in millions	Percentage
Agriculture	249.0	69.82
Production Other than Cultivation	37.7	10.57
Commerce	21.3	5.98
Transport	5.6	1.57
Others	43.0	12.06
Total	356.6	100.00

Source: "India, A Reference Annual", 1958, p. 25.

Table No. 4 Distribution of Working Force by Occupation (1950-51)

Occupations	Number in millions	Percentage
Agriculture, Animal Husbandry and Ancillary Activities	102.7	71.8
Forestry	0.4	0.2
Fishery	0.6	0.4
Mining	0.8	0.5
Factory Establishments	3.0	2.1
Small Enterprises	11.5	8.0
Communications	0.2	0.1
Railways	1.2	0.8
Organised Banking and Insurance	0.1	0.1
Other Commerce and Transport	9.5	6.7
Professions and Liberal Arts	6.4	4.5
Government Services	3.9	2.7
Domestic Service	2.9	2.1
Total Working Force	143.2	100.0
Population	359.3	

Source: ibid., p. 190.

Table No. 5 National Income by Occupational Categories (1954-55)

Occupational Category	Amount (in million rupees)	Percentage
Agriculture, Animal Husbandry and Ancillary Activities	42,300	68.67
Forestry	700	1.14
Fishery	500	0.81
Mining	1,000	1.62
Factory Establishments	7,500	12.18
Small Enterprises	9,600	15.58
Total	61,600	100.00

Source: ibid., pp. 188-189.

are given below.

It may be observed further that the Indian economy cannot at once get

out of the colonial characteristics of former years by independence. According to an investigation made by the Federal Reserve Bank of India, the private investments to the joint-stock companies in India in 1948 amounted to 530 million pounds sterling, of which 44.7% consisted of foreign capital. Among the foreign capital investments in India, of course those of the United Kingdom were the largest. In 1948 Britain possessed 85% (amounting to 188 million pounds sterling) of the Indian Government Securities owned by foreign nationals besides 70% (amounting to 282 million pounds sterling) of long-term private investments in India. In the same year there were 1,062 companies in India each with paid-up capital of 500,000 Rupees or more, of which 93 companies were foreign companies registered in foreign countries, while 306 companies were Indian companies under the control of foreign nationals, and 663 companies were under the control of Indians. However, out of the foreign and Indian capital in Indian larger companies in 1948, the proportion of foreign capital to total capital in each industry was 97% for petroleum, 93% for rubber manufactures, 90% for light railways, 90% for matches, 89% for jute, 86% for tea, 73% for the mining other than the coal, 62% for coal, 54% for the rubber plantations, 46% for financing, 43% for electricity (refer to R. Palm Dutt, "The Crisis of Britain and the British Empire," 1954, pp.202-205). In the foreign trade also the position occupied by Britain was a predominant one. If the figures for 1956 are considered, it will be noted that 21% of exports and 26% of imports of India were the foreign trade with the United Kingdom. Next to Britain the U.S.A. is coming to be the most important country as it may be noted in the fact that 14% of India's exports and 12% of its imports for the same year were with the U.S.A. Again, the colonial character of the Indian economy may be seen in the monocultural characteristic of its agriculture. This is well exemplified in the fact that a small number of Indian native products comprises the greater part of its export trade. According to the statistics for 1950, in the total exports of India, cotton and cotton manufactures occupied 27%, jute and jute manufactures 20%, tea 14%, raw hides and skins 5% and pepper 3%, making a total of 69% for the above-mentioned five items (refer to United Nations, "A Study of Trade between Asia and Europe," 1952, p.10).

In order to achieve democratization of India and the development of her economy, the necessity for the spread of education has been keenly felt. Since India achieved her independence, the Government and civillian circles of India have exerted their best efforts in this direction and have ob-

tained a fair measure of success. Especially, in the sphere of industrial and technical education, which is necessary for the economic development of the country, noteworthy results have been achieved.

The plans for the development of education as well as for the development of industrial and technical education in India must conform strictly to the actual conditions existing in the country. Above all these plans must conform to the industrial structure of India as noted above. Fortunately, the intelligent classes of the people of India fully have recognized this point. As regards the development of industrial and technical education they have recognized that of course it is necessary to train a well-educated and competent personnel demanded by the modern large industries and commerce, but that what should be given a greater emphasis is the need for agricultural education as well as for the education of technicians. In this sphere of education it has been pointed out that the spread of the secondary education along with the higher education is most essential. And this educational policy has been put into practice.

When one considers the development of education in India in general and particularly of its industrial and technical education, the second essential requisite is the lessening of the economic burden as much as possible. As India is a exceedingly poor country, neither private individuals, the Central Government nor the States are in a position to provide adequate funds, supplies or facilities required for education. The development of education in India depends upon the solution of the problem of poverty of India. But the latter also forms the premise to the solution of the former, namely the development of education. Thus there exists a vicious circle in the relationship between the two. The way to sever this relationship is to establish and diffuse the educational system on a self-sustained basis through the harmonious combination of education and economy together with the combination of education and activities if reliance on foreign aids are to be excluded. In recent years such an idea has been fast being put into practice in the Soviet Union and Communist China. But in India the same system of education has already been introduced under the name of "basic education" by means of democratic methods since the 1930's.

Agriculture in India is what one may call Oriental agriculture and rice cultivation in the paddy-fields occupies an important role, as it is the case in Japan. If the Japanese technics of rice cultivation are widely introduced into India, the production of rice in India will be greatly increased. This is a fact that has already been demonstrated through experiments. In the

fields other than the technics of rice cultivation, there are not a few systems, policies and technics in agriculture which Japan can furnish India with models. It has already been pointed out that small-scale industries occupy an important position in India. Also in the developmental process of capitalism in Japan, small and medium enterprises have played a significant role. Therefore Japan has many things she is able to enlighten India in this field too. Further, as regards the circumstances by which Japan was enabled to emerge as the only advanced capitalistic country among the Asian nations, the people of India are anxious to learn from Japan. There will be possible grounds for co-operation between Japan and India in the field of education in such matters as mentioned above.

2. The Educational System of India

Before considering industrial and technical education in India, a general consideration of the educational system of India will be undertaken.

(1) Administrative System for Education

Since 1921 education in India has been a provincial subject under the direct control of an elected Education Minister. In the Constitution of India no fundamental changes have been made on these basic conditions.

However, two qualifications have been placed on the above-noted basic conditions; one qualification is in respect of the university education, while the other is in respect of technical education. On both of these spheres the Central Government assumes full responsibility. That is to say, the Central Government of India assumes responsibility for the co-ordination of facilities and the maintenance of standards at the higher levels in respect of university education and technical education.

Moreover, the exigent educational situation in India has compelled the the Central Government to take a growing concern in almost all phases of education. Accordingly, the Central Government is holding three factors in order to ensure the national uniformity in aims, objects and standards of education. The first factor lies in the fact that as almost every State has not sufficient financial resources to carry out its educational programs, it must look to the Central Government for grants and subsidies. The second factor lies in the fact that the Central Government is a depository of educational information from all States, and often assumes the function of a clearing house of educational information for all of the States. The third factor is to be found in the fact that nearly all powers of the Governments of almost every State are in the hands of the same political party as the

political party which wields power at the Centre, viz., "The National Congress Party of India".

Legally, however, the Central Government can only persuade the State Government and cannot compel it regarding the educational problems. Accordingly, it becomes necessary to resort to a special measure in order to guarantee the uniformity of education and to secure its co-ordination. Among these measures the most important is the Central Advisory Board of Education, which was established in 1921, and though it is an advisory organ, as its name indicates, it includes the Education Ministers of all States as members besides many experts in educational circle and has the Central Education Minister as its chairman. Accordingly the results of deliberations of this Board have an almost binding force on the Central Government as well as on the State Governments. In the actual operation of the Board heretofore, it is said that its recommendations were almost invariably unanimous and this very fact gives the Board still larger authority. Another measure which is playing an important role in the maintenance of educational standards and uniformities in India is the Planning Commission of the Central Government. The Planning Commission was set up in order to establish the Economic Construction Plans in which educational construction plans should also be included and it not only has a binding force over the Central Government but also on the State Governments. As already mentioned, the Central Government has the responsibility over university education and technical education. As an organ for the fulfillment of its responsibility there are the University Grants Commission and the All-India Council for Technical Education. As large amounts of subsidies and grants are disbursed by or on the advice of these organs, they exercise a more direct and powerful influence over the university and technical education.

It was in August, 1947 that the new ministry, namely the Ministry of Education which has the exclusive jurisdiction over education, was established in the Central Government of India. Prior to that time, educational administration was under the jurisdiction of a single department known as the Department of Education, Health and Lands, which was established in 1910 and had jurisdiction over the administration of education, agriculture and sanitation.

The Ministry of Education of the Central Government has an exclusive jurisdiction over education in the central areas under its direct control; it is responsible for the running of the four universities established by the Central Government, viz., the universities of Aligarh, Banaras, Delhi and

Visva Bharati, and such other institutions of national importance as Parliament may by law declare. This Ministry also carries on the work of cultural co-operation with foreign countries and with the UNESCO.

(2) The Educational Ladders

The educational ladders vary according to States so that no general statement equally applicable could be made. But the following may be mentioned as typical cases: elementary education starts from four to six years of age of a child. Pre-elementary education is not given due attention, and only in urban areas there are a small number of day nurseries and kindergartens.

In elementary education there are two systems, one of which is the primary school consisting of from four to six year course, while the other is the junior basic school, usually embracing a five year course. Some of the States have the higher elementary school or vernacular middle school of three year course following the primary school education. This school is a new type of school in which all lessons are taught in the vernacular tongue and no other languages are taught.

Corresponding to the dual system of elementary education there are also two systems in secondary education, in each of which there are two stages. Corresponding to the primary school, there is middle school as a first stage, and corresponding to the junior basic school, there is senior basic school as a first stage. Although the duration of the course of these schools differs from a State to another, it is from three to four years as a rule. There are two kinds of stage above the middle school; one kind of it is the high school, whose duration of course is from three to four years. The second is the higher secondary school, which has absorbed the first and second years of the intermediate stage of the university in addition to the course of high school so as to assure the quality of educational standard. The stage above the senior basic school is the post-basic institution whose duration of course is usually five years. Here ends the ladder of the basic education. Further, as a principle upon completion of the primary school the pupil is qualified to enter senior basic school, but it is impossible for him to enter the middle school upon completion of the junior basic school.

Besides there is a public school of the English pattern in India. The Indian Government has decided to establish the representative public school one each in the Southern and Northern Zones of India.

Secondary education in many of the advanced countries is pursued up to the minimum age of 18. In India there is a strong sentiment in favor of

holding the age limit to 17 years in consideration of the financial limitations on the part of the various States and the short life average span of the people of India. Though in many of the colleges and universities there is a rule prohibiting admission of students under 16 years of age, it is said that though the some youths who are under 16 years of age after completion of secondary education sometimes apply for admission to colleges and universities.

Table No. 6 Duration of the Courses up to the Middle School in Several States of India

State	Primary Stage	Middle Stage	Higher Stage	Higher Secondary Stage	Total
Assam	3	3	4		10
Bihar	5	2	4		11
Bombay	4	3	4		11
Dehli (1)	4	4	2	1	11
Dehli (2)	5	3	2	1	11
Madhya Pradesh	4	4	3		11
Madras	5	3	3		11
Punjab	5	3	2		10
Rajastan	5	3	2		10
Uttar Pradesh	5	3	2	2	12
West Bengal	4	4	2		10

Source: S. N. Mukerji, "Education In India, Today and Tomorrow," 1957, p. 123.

At the university stage the duration of the first degree course is four years, which comprises the intermediate stage of two years and the Bachelor's degree course of two years. Above the Bachelor's degree course there is a Master's degree course of usually two years. Still further above the Master's degree course, there is a Doctorate degree course of usually two years. Students who completed high school link with the intermediate stage of universities. Students who completed a four years' course of studies at the higher secondary school, including high schools link with the second year of the intermediate stage of colleges and universities and those who completed a five year course with the Bachelor's degree of universities respectively. As it is the case in the State of Dehli, in such places where higher secondary schools have been established, the intermediate stage of universities were

abolished and a Bachelor's degree course of three years have been established.

(3) Language in use as a means of education

Up to only a recent past, at primary school, children were taught in the Indian tongue of each locality, at middle school, the study of English was made compulsory on all pupils, and when they were admitted to a high school, all instructions were given in English and in the examinations for graduation use of the English language has been enforced, and again in the lectures and examinations in colleges and universities English language has been used except in special subjects. It was in the decade of the 1930's that the use of the vernacular languages of India was begun at middle schools and high schools. Since then, the steps taken in this direction have gradually been extended and since the independence of India, this tendency has been accelerated more and more. At the present time, in many of the middle schools and high schools of large cities, instruction is given in English as in the past days, whereas in the majority of the middle schools and high schools of Inland India, both instruction and examinations have come to be given in vernacular languages in India. However, in the case of the latter learning of English is also made compulsory. Even in universities, although there are a certain number which tries to substitute English with the vernacular tongue as a means of education but it appears that there is not any university which has carried out the change into actual practice up to the present time. Thus English is still in use both in instructions and in examinations at colleges and universities.

As a means of education in the universities of India, what language is to be used is an important question. The University Education Commission appointed by the Government made a recommendation on this question that each of the universities should use the vernacular tongue of the locality where it was situated. But as in India there are a really large varieties of native dialects, the Constitution of India itself gives public recognition to 14 different dialects. Under such a circumstance, if the recommendation were followed, the national and ethnic solidarity of the country would be impeded and the possibility of exchanges of scholars among the various regions of the country would be lost. Then, what would follow if a particular Indian language should be adopted? As it is now stipulated that the Hindi is to be the official language, a widespread opinion prevails that the Hindi should be widely adopted even in universities. But in the localities where the Hindi is not used, its adoption will be a source of inconvenience so that there is the fear that it may be met with ill-feeling of local inhabitants. As

a matter of fact, the Hindi is a foreign language to many of the people of India. Admitting for the sake of argument that the Hindi should be adopted in the universities, it will be found necessary to develop further the technical scientific terminologies in Hindi, to prepare the textbooks and other books in Hindi, to train a sufficient number of teachers who can give lectures and other instructions in Hindi. Moreover, there should be established the basic conditions whereby the students themselves who receive instructions will be able to become proficient in Hindi. The Central Government of India is exerting its zealous efforts in the direction toward the adoption of Hindi in university education, but it will require a considreable time before the above-noted prerequisite conditions are fulfilled. Consequently, the status of the English language among the universities of India will not undergo any great change in the near future.

(4) The Percentage of Illiteracy

The effort for sweeping out illiteracy began in 1937 in the case of the various States and in 1948 in the case of the Central Government. According to Humayun Kabir, the percentage of literacy among the Indians was 14.6% for those over five years of age in 1941, but it rose to 18.3% in 1951. Again according to him although the percentage of literacy among the Indians was barely 15% at the time of independence. It would have been probably below 10% if only the adult population were taken into consideration. According to the Statistics compiled in 1951, the percentage of literacy was 16.61%, of which 24.87% was for the male population, while 7.87% was for the female population.

What is noteworthy in connection with the percentage of literacy is the percentage of attendance of primary schools and middle schools. In the case of children in the age range from six to eleven, (namely, children eligible for attendance to primary school) only 30% of them were found to be attending school in 1947. But the percentage of attendance rose to 51.0% in 1955-56. To hike the percentage of attendance to 62.7% in1960-61 is the target now being aimed at. Further, it is said that 60% of children who entered primary school in 1945-46 did not attend school till the fourth year (viz., till 1948-49). Regarding the boys and girls ranging in age from 11 to 17 (namely, boys and girls who are eligible for attendance to middle school), according to Humayun Kabir, the percentage of attendance was 10% in 1954. In 1955-56 the school attendance percentage of those in the age range from 11 to 14 years was 19.2% (the target is to raise this percentage to 22.5% in 1960-61), and the rate of school attendance for those of the age range from

14 to 17 years was 9.4% (the target is to raise the rate to 11.7% in 1960-61). In the Constitution it is stipulated that the universal, compulsory, and free education should be given to every person up to 14 years of age within ten years after the promulgation of the Constitution. To leave for the moment whether India will be able to achieve such a target within the time expected, the fact that India is forging ahead towards such a target may be recognized from the data as given below.

3. Statistics on Education

In the following statistics may be seen the present status of education in India.

Table No. 7 Types of Educational Institutions and their Numbers

	1951-52	1952-53	1953-54	1954-55	1955-56
Pre-Primary Schools	330	396	426	513	630
Primary Schools	215,036	222,014	239,382	263,626	278,138
Secondary Schools	22,639	24,059	25,767	27,518	32,568
Vocational Schools	2,463	2,616	2,599	2,752	3,067
Special Education Schools	47,994	48,706	44,142	47,534	50,987
Arts and Sciences Colleges	552	581	613	657	712
Professional Colleges	214	239	253	291	346
Special Education Colleges	68	79	87	106	112
Research Institutions	20	31	35	33	34
Boards of Education	9	9	10	10	11
Universities	29	29	30	31	32
Total	289,354	298,759	313,344	343,071	366,637

Source: "India, A Reference Annual" 1958, p. 100.

Table No. 8 Total Number of Educational Institutions, Enrolment and Direct Expenditure

Year	Number of Institutions	Number of Students on Rolls (in thousands)	Total Expenditure (in million rupees)
1951-52	289,354	26,572	1,245.6
1952-53	298,759	27,524	1,376.4
1953-54	313,344	29,139	1,477.4
1954-55	343,071	31,267	1,650.1
1955-56	366,637	33,924	1,896.6

Source: ibid., p. 100.

Table No. 9 Distribution of Educational Institutions classified by Management

Management	Number of Recognized Institutions				
	1951-52	1952-53	1953-54	1954-55	1955-56
Government	71,074	70,681	70,520	80,434	87,601
District Board	102,945	107,275	117,527	130,636	142,980
Municipal Board	9,603	9,919	10,046	10,401	10,497
Private: (a) Aided	95,596	100,450	104,324	110,956	114,204
(b) Unaided	10,136	10,434	10,927	10,644	11,355
Total	289,354	298,759	313,344	343,071	366,637

Source: ibid., p. 101.

Table No. 10 Number of Pupils in Recognized Institutions

Management	1951-52	1952-53	1953-54	1954-55	1955-56
Government	5,345,523	5,473,575	5,840,568	6,479,643	7,250,735
District Boards	9,828,781	9,939,163	10,740,424	11,354,736	12,444,863
Municipal Boards	2,142,124	2,200,631	2,253,009	2,445,713	2,595,855
Private: (a) Aided	8,313,508	8,839,879	9,209,324	9,842,637	10,369,406
(b) Unaided	941,639	1,070,691	1,095,425	1,144,691	1,262,734
Total	26,571,575	27,523,939	29,138,750	31,267,420	33,923,593

Source: ibid., p. 101.

Table No. 11 Expenditure by Sources as Percentage

Source	1951-52	1952-53	1953-54	1954-55	1955-56
Government Funds	56.5	58.3	57.8	59.9	61.8
District Board Funds	6.9	5.8	5.9	5.5	5.2
Municipal Board Funds	4.3	4.0	3.9	3.7	3.4
Fees	21.6	21.6	22.3	21.4	20.0
Endowments	3.8	3.2	3.1	3.0	3.0
Others	6.9	7.1	7.0	6.5	6.6
Total	100.0	100.0	100.0	100.0	100.0
Total in Million Rupees	1,245.6	1,376.4	1,477.4	1,650.1	1,896.6

Source: ibid., p. 102.

Table No. 12 The Results of the Educational Policy under the First 5-year Plan and the Target of the Educational Policy under the Second 5-year Plan

Aspects of Educational Policy	1955-56 Results	1960-61 Target
(1) Percentage of Children of Age-group 6-11 to be under Instruction to Total Population of Age-group	51.0	62.7
(2) Percentage of Children of Age-group 11-14 to be under Instruction to Total Population of Age-group	19.2	22.5
(3) Percentage of Children of Age-group 14-17 to be under Instruction to Total Population of Age-group	9.4	11.7
(4) Number of Primary/Junior Basic Schools	277,197	326,800
(5) Number of Junior Basic Schools	42,824	64,919
(6) Number of Middle/Senior Basic Schools	21,702	22,725
(7) Number of Senior Basic Schools	1,529	4,571
(8) Number of High/Higher Secondary Schools	10,695	12,125
(9) Number of High Schools upgraded to Higher Secondary Schools	47	1,197
(10) Number of Multipurpose Schools	334	1,187
(11) Number of Universities	32	38
(12) Number of Engineering Institutes at Degree level	47	54
(13) Number of Engineering Institutes at Diploma level	88	104
(14) Graduates in Engineeering	3,395	5,480
(15) Diploma Holders in Engineering	3,511	8,000
(16) Number of Technological Institutes at Degree level	25	28
(17) Number of Technological Institutions at Diploma level	36	37
(18) Degree Holders in Technology	700	800
(19) Diploma Holders in Technology	430	450

Source: ibid., p. 102.

CHAPTER III

Industrial Education in India
—— Industrial Structure and Industrial Education in India (2) ——

TADAO MIYASHITA

1. Introduction

The purpose which Britain tried to achieve through educational system in India throughout the days of domination of India by the English East India Company and by the British Government was to acquire the necessary number of native Indian personnel who can speak the English language. As a matter of fact, it was impossible to supply from England to India all the Government officials whom the administrative system of India required. Accordingly, the Government officials in the higher post in the administrative system of India were appropriated by the British, while the posts of comparatively less importance were filled by many Indians who were educated in India. Such a policy was declared clearly and for the first time in Lord Hardinge's Proclamation in 1844. Among the Christian missionaries, some leading spirits in India, and also those in authority in the British Government, as for instance, Lord Macaulay, advocated that the western sciences and culture should be imparted to the people of India in order to enhance widely their general interests. However, the fundamental policy of the rulers of India regarding education as noted above had remained unaltered in the least. For the sons of Indian people to be graduated from school where the English language was taught, to obtain a degree from a university where the students were given instructions in English, was a guarantee for them to obtain lucrative employment in the Government offices or in civilian firms. The status of universities had thus been raised. Under such a background, establishments

of colleges and universities began. So far as the States are concerned, first modern educational system can be found in the establishment of a university in 1857. In the same year, the universities of Calcutta, Madras and Bombay were established. Establishments of universities were followed by the development of the middle school system, which was devoted for training of students desiring to enter a university, and it in turn led to the expansion of the elementary educational system. The form thus developed is known as the permeation policy. But the objective aimed at in this policy was the pursuance of the educational policy of Britain as above-described. Therefore, chief stress was laid on the preparation of those who aspired to enter a university in the case of the secondary education. Education through the English language became universal with the result that the native vernacular dialects were ignored utterly as a means of education and education over and above the secondary schools came to exist for the small priveleged classes only. Moreover, the courses of studies in the secondary education centered around literature and arts and came to be academic and isolated from the actual life. After all there was hardly any aspect of vocational education or of technical education in the universities. In this manner a large number of impotent intellectuals having no training in practical affairs have been produced. Again, if the country as a whole be viewed, the spread of education has come to be insufficient, especially such being the case in the rural districts.

However, with the modernization of India and with its industrial development there arose the cry for the need of vocational education and technical training in India since the closing years of the 19th century with the result that, though far from being sufficient, progress in this direction came to be noted.

With the independence of India the necessity for the spread of education has become acute in order to achieve democratization of the country and her economic development so that the need for vocational education and technical training has come to be keenly felt.

Since the technical education in India will be dealt with in the next Chapter, here the writer will review the industrial education in India.

2. Industrial Education in Elementary Education

In connection with the industrial education in India, at first the development of basic education in the primary and middle school education should be considered. In India, along with the ordinary primary schools, the middle

schools and the high schools, there have been established the system of junior basic schools, senior basic schools and post-basic institutions and this system is in the course of development.

The idea of the basic education of India originates from the view of education enunciated by Mahatma Gandhi in 1937. According to Gandhi, without reform in education he cannot attain his ideals. The quality of a society depends upon the quality of its members. Hence improvement of the individual through education is the means to achieve an improved type of society . The quality of the citizen of the future can be best formed during the first and formative years of his life. From such recognition Gandhi formulated his conception of basic education as the means to achieve a co-operative commomwealth of men. According to Gandhi "the principal idea is to impart the whole education of the body and the mind and the soul through the handicraft that is taught to the children. You have to draw out all that is in the child through teaching all the processes of the handicraft and all your lessons in history, geography, and arithmetic will be related to craft."

The human individual is a social being and must live in a community. The basic education treats the child as a member of a co-operative group. Under this educational formula the children are taught to feel as members of one community, and as such, responsible to and for one another. They are taught that duties to others are as important as one's own rights. Thus the school becomes a place wherein the children are trained to become a good citizen as a member of the community in future. In this manner the basic education endeavors to rectify the individualistic trends of the modern education, especially the individualistic trend brought into India by the British.

In the basic education, in order to achieve the objective as mentioned above, emphasis is laid on activity, which is incorporated into the school curriculum. Basically considered, production forms the backbone of an organized human society, for society lives by its capacity to produce goods which its members demand and the level of production is maintained by the co-operative efforts toward production by all members of the society. The basic education strives to make children to understand his status in the social environments by incorporating the activity which is socially useful in the school curriculum.

The activity to be assigned to the children as the curriculum in the basic education should be one that is familiar to them. As such activity,

multiple lessons should be imparted, so as to make each of the children to choose them at his will in conformity to his hope and aptitude. Among such lessons may be mentioned cotton spinning, agriculture, horticulture, carpentry, building and repairing of houses, leather tanning, book-binding, domestic works including cooking, sewing and house-keeping. What is considered to be "basic" in the term "basic education" is that activity in the basic education is centred on "basic" handicrafts, namely, handicrafts which are fundamental and enable the children to engage in their derivative occupation.

The results produced by activity in basic education will be placed before the children immediately as the products of their labor. In this manner, this system of education imparts on the minds of children the delight and pleasure of production, thereby in turn heighten their self-confidence and will foster their active spirits. The education which has been in practice heretofore in India is an education in which preponderant stress is placed on intellectual training detached from the realities of Indian life. When those who were given such an education once faces a new situation they are apt to lose their self-confidence and their original ideas. The basic education endeavors to offer a remedy to such a defect of conventional education.

The basic education aims at making the elementary education itself or further the secondary education itself one complete system of education. In the educational system of India heretofore the elementary education and the secondary education had been considered as a means of receiving higher education; the basic education is calling for a about-face in the course hitherto pursued.

In the Indian society intellectual labor and mannual labor have been separated with the result that the intellectual classes, detached from those who are engaged in manual labors, have been held in esteem and respect. This trend was intensified not only by the cast system but also by the educational policy pursued by the British in India. The basic education is trying to remedy such a general trend by stressing handicrafts.

As a consequence of the fact that India is an agricultural country, the basic education strives to cope with the demands to assign an important role to agricultural education. In India agricultural education has received the least consideration heretofore.

Despite the fact that the spread of education is an urgent and grave problem for India, procurement of the necessary funds for the purpose also poses a grave question because India lags in economic development. In the

basic education, however, with the products obtainable assignments of handicrafts in the school curriculum, the foodstuffs and clothes for both the pupils and teachers will be made self-sustaining though they may be only partially. If there is a surplus in the products, it is possible to dispose of it and to divert the proceeds therefrom to educational expenditures. In the State of Bihar where the basic education has been enforced for the longest period in India, it is said that some basic schools have recovered as much as fifty percent or more of the total expenses of the school by the sale of products in the activity. But it has been held that to change the school into a factory by placing undue emphasis on this phase may be not proper nor just. The basic school should essentialy be a place for training worthy citizens each of whom has a sound body and soul and is conscious of the sense of social solidarity. One of the reasons why the basic education is regarded as important lies in the fact that in this manner there is a source of educational expenditure in the educational system.

In the introduction of the activity, stress should be laid both on efficiency of production as well as on the quality of the products, and in order to achieve these objectives it is necessary to acquire able teachers. But it is impossible to train many able teachers in a short period of time. Therefore the spread of basic education system in India is limited by the number of able teachers available. In August, 1947 the Government of India issued a directive to each of the States that the elementary education of India should be gradually switched to basic education. Again, based on the recommen-

Table No. 1 The General Situation of Elementary Education

Year	Number of Schools		Number of Pupils (unit–1,000)		Direct Expenditures (in million rupees)	
	Primary School	Basic School	Primary School	Basic School	Primary School	Basic School
1951-52	215,366	33,751	19,023	3,070	405.4	54.8
1952-53	222,410	34,878	19,551	3,082	443.6	61.5
1953-54	239,808	35,805	20,843	3,201	464.3	66.7
1954-55	264,139	38,515	22,243	3,371	511.0	73.0
1955-56	278,768	47,813	22,966	5,060	539.8	121.0

Remarks: "Primary Schools" include a certain number of nurseries and kinder-gartens which are pre-elementary school educational institutions.
Source: "India, A Reference Annual," 1958, p. 103.

dations of the Assessment Committee regarding basic education in 1955, following programs are gradually coming into operation, namely to shift the existing primary schools to the basic schools, to build newly the basic schools, to incorporate the handicrafts in the school curriculum even in ordinary primary schools, to publish the literature on basic education, and to train the teachers for basic schools.

The status and development of the basic education in elementary education are as shown in the following table shown above.

3. Industrial Education in Secondary Education

Secondary education in India had originally been developed as a preparatory stage for entrance into universities. The technical education and vocational education, being unnecessary for the entrance into the universities, were almost entirely ignored. Among the well-informed, however, voices were raised in criticism of such a trend, and efforts had been directed against it.

When the writer peruse the history of education in India from such a point of view, his attention is arrested first of all to the fact that, in 1891, the State Government of Bengal tried to extend the subjects of the entrance examinations to universities with a view to add the subjects belonging to vocational education to them. This is a fact of great historical significance. However, this attempt was not realized due to the opposition raised by the principals or directors of secondary schools or colleges. But even in these days, it is said that there were some middle schools which gave instructions in surveying, sanitations, biology, chemistry, physics, etc., among the school curriculum.

In the early years of the twentieth century, educational authorities of some States began to hold the qualifying examinations in which the business subjects (book-keeping, short-hand, economic geography, etc.) of secondary school graduates' standard were included. These examinations were called the "School Final" or the "School Leaving Certificate". This system was inaugurated by the State of Bombay in 1907 and other States followed suit in the adoption of the system, but it was abolished in the 1930's. In the meantime, however, it is worthy of note that the industrial education of secondary school stage had shown a marked growth with the industrial development of India.

Before long there appeared in India also the suggestions which laid stress on the need for establishing vocational educational institutions of

self-completing nature, in parallel with the secondary schools as the preparatory educational institutions for entrance into the Universities.

Among these suggestions, the theory of basic education advocated by Gandhi and the Report of the Abbott-Wood Commission (1936-37) were most to be noted. Taking the above-noted suggestions into consideration, the Government of the State of Madras submitted, in 1937, a report recommending the diffusion of the course in vocational education along with the general cultural course which was preparatory stage for entrance into the universities at the high school stage. Since then, in the States of Madras, Bombay as well as in other principal States there were developments along the lines as described above.

Prior to the independence of India, however, technical education and vocational education in secondary education were still none other than heretical existences when viewed from the standpoint of the educational system of India as a whole. It was only since India achieved its independence that this issue has come to receive a serious consideration.

As the vocational education in the secondary education in present day India, the sudden rise of the senior basic schools and the post basic institutions, which correspond to the junior basic schools in the elementary education, should be noted at first. The purpose of the basic education in the secondary education is the training of the rural youths to make them "wise parents and creative citizens". In order to achieve the objective, school course of activity is extended to secondary education stage and efforts are being made to render education more economically self-sustaining and at the same time to get rid of the distinction between labor and learning. Again throughout the whole curriculum, emphasis is laid on social relations, and through activity it is intended to develop the habits of co-operative activity that will conform to the physical, mental, and aesthetic life of each individual. For statistics on the development of basic education in secondary education, reference is made to table No.12 under Chapter 2 "Industrial Structure and Educational System in India."

The development of the multipurpose school in secondary education of India is the subject to be noted secondly. The Lakshmanaswami Commission which submitted a report regarding secondary education also laid stress on the desirability of establishment of the multipurpose school. Thus, in the secondary education in India, vocational education has been introduced besides the general cultural courses and efforts have been continued toward making the secondary educational system of India a self-completing existence,

which had been subordinated entirely to univeristy education. As one of the causes of low efficiency of laborers in India, it has been pointed out that there is short of well-trained competent executives who are to become foremen and other responsible persons in the work-shops. The new policy of secondary education in India as above-noted is intended to remedy such defects. The Government of India has decided in line with this new policy to divert at least 500 schools of the ordinary high schools to the multipurpose school by July, 1956. As it will be noted in Table No. 2 under Chapter II Industrial Structure and Educational System in India, the number of the multipurposes school in the year 1955-56 was no more than 334 schools, which is to be increased to 1,187 schools in 1960-61.

Furthermore, according to Table No. 5 under Chapter II, The number of vocational schools of secondary school stage was 2,463 in 1951-52, which increased to 3,067 in 1955-56, while the number of schools specializing in education increased from 47,994 to 50,987 in the same period.

4. Industrial Education in University Education

The universities in India can be classified into the following three kinds by their cultural origin:

1. Those that are based on the ancient Indian traditions—instructions are conducted in Sanskrit.
2. Those that are based on the ideals of Islam—instructions are conducted in Arabic and Persian languages.
3. Modern European type Education—instructions are conducted in English.

Again, if Indian universities are viewed from the point of their organization, there are following three kinds:

1. Affiliated universities. These are institutions which offer no teaching by themselves and education is carried on in affiliated colleges. These universities only determine the courses of studies, hold examinations and award degrees and diplomas in respect of colleges affiliated to them,.

2. Affiliated and Teaching type of Universities. These are institutions which not only execute all functions of Affiliated University, but also offer teaching and research facilities generally at the post-graduate level and in some cases from the post-intermediate level onwards.

3. Residential and Teaching Type Universities. These are unitary organizations, controlling all colleges under their jurisdiction and undertaking teaching at all levels. Many of the universities which have been established

comparatively recently belong to this third type of university.

Beside universities there are many institutions which carry on a higher level of education. Although such universities as the Jamia Melia at Dehli and Gurukul at Hardwar have not been established officially under the acts either of the Central Government or of State Governments, they are maintaining the same status as other universities. Furthermore many of the research institutes of science and technology are carrying on education which are not lower than the university level as well.

Originally, in the universities of India, chief emphasis was laid on education for literature and liberal arts. This holds true both to the universities peculiar to India and to the modern universities of the British type. But such subjects as medicine, natural sciences and technology have been taught from fairly early times in the modern-type universities and colleges in India. Even in such cases chief emphasis was laid on the pure natural sciences (physics, chemistry, zoology, botany, physiological hygiene, statistics, etc.) with the result that education in the applied sciences and technology was far from adequate. It was in comparatively recent years that education in the latter subjects began to show a marked progress.

It has also been in the past 30 or 40 years that the social sciences came to be emphasized in the curricula of universities. Among the social sciences comparatively strong stress was laid on economics, but the time when economics became an independent subject or the time when the department of economics was formed as a separate and independent one was in the years following 1920. Prior to that time, economics was generally taught as a part of history or of political science.

Since the independence of India, the question of universities has been examined and as a result there has been a clamor for the need of vocational education in universities. In 1948, the Indian University Education Commimission was established with Prof. Sarvepalli Radhakrishnan as the chairman, which thoroughly investigated the university system. In its report submitted in 1949, the Commission recommended that it was necessary for universities to train leaders not only in politics and administration, but also in various professions including commerce and industry, that it was essential to develop the departments of the sciences, technology and agriculture in the universities, not to mention of general education, and that it was especially necessary to lay stress on the agricultural education in an agricultural country like India, and to establish agricultural colleges in rural areas.

Based on the recommendations made by the Rural Higher Education

Committee in 1954, the National Council for Higher Education was established which was empowered to make recommendations to the Government on all matters pertaining to the development of higher education in rural communities. This Council selected ten institutions and recommended to develop them into Rural Institutes, and these recommendations have already been put into practice. In order to develop higher education in rural villages, Rural Institutes have set up following four courses for those who completed secondary education:

1. A three year diploma course in rural science.
2. A two year certificate course in rural science.
3. A three year certificate course in civil engineering and rural engineering.
4. A one year preparatory course to initiate matriculates into the three year diploma course.

Efforts are now being made to secure recognition of the diploma in Rural Services to a first degree of a university. Furthermore, in the Rural Institutes, it is intended to train the capable personnel required by Rural communities by making it possible for students to make choice of subjects more freely than in general colleges.

In order to make harmonious development of the study of the business administration, Board of Management Studies was created under the support of All-India Council for Technical Education. Based on the recommendations of this Board seven centers were selected and the courses such as industrial engineering, industrial management and business administration have been especially developed there. The seven centers just mentioned are (1) All-India Institute of Social Welfare and Business Management, Calcutta, (2) Dehli School of Economics, at Dehli University, (3) School of Economics and Sociology, Bombay University, (4) Department of Economics, Madras University, (5) Indian Institute of Technology, Kharagpur, (6) The Victoria Jubilee Technical Institute, Bombay, and (7) The Indian Institute of Science, Bangalore. Those who are eligible for admission to these centers must have a Bachelor's degree in the study concerned, and must have had at least two years practical training. Though it is intended to establish sooner or later both part-time courses and full-day courses of studies as the target, at present only part-time courses are offered except at the Indian Institute of Technology, Kharagpur.

Regarding the present situation of industrial education in the universities in India, some idea may be gathered from the following two tables

besides tables No.7 and No.12 in Chapter II Industrial Structure and Educational System in India.

Table No. 2 Statewise Distribution of Institutions of Higher Education (1955-56)

State	Universities	Boards of Education	Research Institutions	Arts and Science Colleges	Professional Colleges	Special Education Colleges	Total
Andhra	3	2	—	47	22	15	89
Assam	1	—	—	21	5	1	28
Bihar	2	—	3	54	27	1	87
Bombay	6	2	16	71	73	7	175
Jammu & Kashmir	1	—	—	12	3	9	25
Kerala	1	—	—	40	13	7	61
Madhya Pradesh	1	1	—	51	22	9	84
Madras	2	1	—	54	28	17	102
Mysore	2	—	4	42	30	7	85
Orissa	1	1	—	14	6	3	25
Punjab	1	—	—	73	24	—	98
Rajasthan	1	1	—	52	13	17	84
Uttar Pradesh	6	1	4	65	40	7	123
West Bengal	3	1	4	95	30	9	142
Dehli	1	1	3	14	8	2	29
Himachal Pradesh	—	—	—	3	1	—	4
Manipur	—	—	—	2	—	1	3
Tripura	—	—	—	2	1	—	3
India	32	11	34	712	346	112	1,247

Source: "India, A Reference Annual," 1958, p. 105.

Table No. 3 List of Universities

University	Year of Foundation	Faculties
Agra	1927	Arts, science, law, commerce, agriculture, medicine and engineering
Aligarh	1920	Arts, science, law, education, engineering and technology and theology
Allahabad	1887	Arts, science, law and commerce
Andhra	1926	Arts, science, law, commerce, agriculture, medicine, educaton, oriental learning and fine arts
Annamalai	1929	Arts, science, engineering and technology and oriental learning
Banaras	1916	Arts, science, law, technology, oriental learning, medicine and surgery, and theology
Baroda	1950	Arts, science, law, education and psychology, medicine, home science, fine arts including music, technology, agriculture, engineering
Bombay	1857	Arts, science, law, commerce, education, agriculture, medicine and engineering and technology
Calcutta	1857	Arts, science law, commerce, medicine, education and engineering
Delhi	1922	Arts, science, law and agriculture
Gauhati	1947	Arts, science, commerce
Gujarat	1950	Arts, science, law, commerce
Karnatak	1950	Arts, science, law, commerce, agriculture
Lucknow	1921	Arts, science, commerce, medicine and education
Madras	1857	Arts, science, law, commerce, medicine, education, engineering and technology, agriculture, oriental learning and veterinary science
Mysore	1916	Arts, science, commerce, medicine, education and engineering and technology
Nagpur	1923	Arts, science, law, commerce, medicine, education, engineering and technology, and agriculture
Osmania	1918	Arts, science, law, medicine, education, engineering, agriculture, animal husbandry, veterinary science, and theology
Patna	1917	Arts, science, law, commerce, medicine, education and engineering
Poona	1949	Arts, science, law, commerce, medicine, engineering, agriculture, fine arts, music

Punjab	1947	Arts, science, law, commerce, medicine, education, engineering, agriculture, oriental learning and veterinary science
Rajputana	1947	Arts, science, commerce, law, engineering and medicine
Saugor	1946	Arts, science, commerce and law
Travancore	1937	Arts, science, law, technology, education, engineering, medicine, oriental studies and fine arts
Utkal	1943	Arts, science, law, commerce, medicine and education

Source: UNESCO, "The Teaching of the Social Science in India," 1956, pp. 71-2.

CHAPTER IV

Technical Education in India
—— Industrial Structure and Industrial Education in India (3) ——

TADAO MIYASHITA

1. Introduction

Regarding industrial structure and industrial education in India a general observation has been made in Chapter II and III respectively. In view of the importance of technical education, however, further observation will be made in the present chapter.

To start with, the technical developments in India may be characterized as one of an extreme under-development, which may be attributed to the following two causes: viz.,

First, the fact that the technics have been handed down traditionally through inheritance from one generation to another, and the additional fact that there exists in the country a social system in which the accidence of birth decides one's occupation, namely the caste system and the joint-family system extensively existing throughout the country.

Secondly, the fact that technical education has been made light of, of which the following mention may be made:

(a) Up to 1940 training of engineers and technicians had been carried on merely to satisfy the administrative requirements of the British rulers.

(b) In the social system of India there exists a strong idea of attaching a great deal of importance to intellectual labor rather than to manual labor. This idea had first been fostered by the caste system by which the upper classes, who did not engage themselves in manual labors, ensured their predominant status. And then it has been further strengthened by the British

educational policy which gave too much importance to intellectual education.

(c) In the educational system also much importance was attached firstly to university education and secondly to secondary education and technical education was made light of.

2. History of Technical Education

During the period of the British rule, technical education had not been developed as a organic part of a national system of education, and had been developed in compliance with the occasional necessity without a fixed policy. The writer will describe the outline of history of technical education in India during this period by separating it into several periods in the following:

First Period. The Period of English East India Company (1800-1857). During this period, technical educational system was established intermittently in order to meet the administrative requirements of the English East India Company. Because of the needs for executing political affairs of the English East India Company it was necessary for the Company to have Indian engineers, Indian technicians and artisans. Accordingly, engineering colleges were successively established at Rookee in 1847, at Calcutta in 1857, and at Madras in 1858, besides a engineering class and a mechanical school were set up in Poona in 1854.

The Second Period. First Period of the British Rule of India (1857-1902).

The Wood's Despatch of 1854 laid stress on the needs for vocational education, but during this period the Government pursued as ever the policy heretofore followed, and institutions for technical education were set up in order to meet their needs for public administration only. During this period, some developments took place. In 1866, the engineering class in Poona was elevated to the status of a college. In 1887, the Victoria Jubilee Technical Institute was established, in Bombay. It was established cheifly through the supports of the civilian circles in Bombay in order to train able technical personnel in response to the development of spinning industry there. This story tells us that the nationalistic capital of the Indian cotton spinning industry in Bombay had already reached such a stage of development at that time. Further there was a certain degree of development of technical schools and industrial schools of secondary school level. During the period of the English East India Company, industrial education was looked upon with indifference, so that there were barely three industrial

schools in the country. But the Christian missionaries established a certain number of industrial schools, where practical works in carpentry and black-smithing were taught. By 1901-02, however, there were found 80 technical and industrial schools with combined enrolments of 4,804 students. Further, in the last decade of the nineteenth century there arose a loud cry for the necessity of technical education in the country. The Indian National Congress Party stressed the need for promotion of technical education almost at every annual session. As a result, the Government, being unable to take a passive attitude, began to select a certain number of men and to send them to the United Kingdom or to the United States so as to enable them to receive technical trainings.

The Third Period. The Latter Period of the British Rule of India (1902-1947).

The Association for the Advancement of Scientific and Industrial Education was established in Calcutta in 1904, which despatched a certain number of Indian students to foreign countries in order to enable them to pursue studies of high level in arts and industry. The British Government authorities in India also announced to put into effect a new policy on scientific education for the first time in 1906. That is to say, there was a succession of establishments of departments of natural sciences in the University of Calcutta and in other institution of higher learning ever since that year. At about that time in Bengal, there were established the College of Engineering and Technology at Jadavpur by the National Council of Education. This college began to grant diplomas in mechanical and electrical engineering courses in 1908 and in chemical engineering in 1921. However, it was in 1917 that a degree class in the mechanical and electrical engineering and metallurgical engineering was established by the University of Banaras as the pioneer. Around the years 1921-37 widespread cries were raised that it was necessary to enable students to receive technological education within the country, which culminated in the establishment of the Indian School of Mines, Dhanbad, the Harcourt Technological Institute, Kanpur, and the School of Chemical Technology, Bombay, etc. In the decade of 1930's there appeared two circumstances which further popularized technical education. First, because of the growth in the number of educated unemployed the need for practical and vocational education came to be stressed greatly. Secondly, due to the outbreak of World War I, Britain began to concentrate her efforts for achieving the objective by exerting herself in the technical training for the purpose of prosecution of the war.

3. Policy for Technical Education in New India

In discussion of the policy for technical education in New India, it is necessary to deal, to a certain extent, on the policy for technical education of the British Government in India prior to the independence of India.

What should be at first taken into consideration is the Sargent Report. This is a report, entitled "Post-War Educational Development in India" submitted, in 1944, by the Central Advisory Board of Education, which was headed by Sir John Sargent, Educational Advisor of Government of India at that time. This Report contained a blueprint of a national system of education in India and a plan for its introduction. Regarding technical education, this report recommended that under the new situation, technical education could not be effectively organized on a provincial basis, that a central organ composed of representatives of the various conflicting interests should be created, and that this central organ should have control over general policy on technical education and should also be empowered to dispose of all technical institutions above the stage of high school (with the exception of technological departments of universities). The Government accepted this recommendation and established the All-India Council for Technical Education in November, 1945. This Council came into existence as an advisory organ only, without controlling power as contained in the Sargent Report but it has made a great deal of contribution to the national development of technical education in New India.

The Central Government appointed a Committee with the late Shri N.R. Sarkar as chairman, in 1945, to make recommendations on the question of the development of higher technical institutions in India, with a view to ensuring an adequate supply of technical personnel required for post-war industrial development in the country. The report of the Council was submitted in 1946, and since independence, the proposal for setting up a higher technical institution in each of the four zones, namely east, west, south, and north zones of India is being put into effect.

Another development prior to independence was the establishment of the Council of Scientific and Industrial Research. This Council formulated a program for setting up a certain number of National Laboratories and Central Research Institutions and had set up Planning Committees for them.

In March, 1947, the Central Government appointed a Scientific Man Power Committee to assess the requirements at various levels during the next five to ten years. The tentative report of the Committee was submitted in

August, 1947. According to the report, the requirements in the coming ten years were estimated to be 54,000 engineers and 20,000 technicians.

Such being the case, when the transfer of power took place, the basic work of the plan for the development of the technical education in India was nearly completed. Upon such a premise the technical education of the New India came to be enforced.

Accordingly, the National Laboratories and the Central Research Institutes contemplated in the plan of the above-noted Council of Scientific and Industrial Research were established successively. The National Chemical Laboratory was established at Poona in January, 1950. It was soon followed by the National Physical Laboratory at Dehli. At the present time there are 14 National Laboratories and Central Research Institutes, and the fields of study in these institutions cover physics, chemicals, roads, buildings, food technology, drugs, leather, electro-chemistry, fuels, glass and ceramics, salt, electronics, and botany. Besides the promotion in researches and studies, testing and standardization of new products, and provision of such products, these institutions extend benefits and give advices to scientists, universities, industries and others when they are not in a position to carry out or to complete investigations by themselves. Further they are contributing toward spread of scientific knowledge and toward cooperation with universities and other educational institutions.

What should be pointed out next is the role which has been played by the All-India Council for Technical Education(AICTE) already mentioned. This Council is the main advisory organ of the Central and State Governments on matters relating to the organization and developments of technical education above the high school stage. The members of the Council are composed of the representatives of the Parliament, Central Ministries, State Governments, private industry of commerce, labor, professional bodies, Inter-University Boards, and of all other interested parties, and its membership comprises as many as 60.

The All-India Council for Technical Education has the following subdivisions: viz.,

(1) seven Boards of Technical Studies in special fields (All India Boards of Technical Studies).

(2) four Regional Committees, one each for the North, South, East and West zones.

(3) a Co-ordinating Committee, that co-ordinates the work of the Committees and Boards and has the power to make decisions on behalf of

the Council when it cannot meet.

The meeting of AICTE is held about once a year or so to discuss broad policies, problems and programs, whereas the meeting of the sub-divisions are held more frequently.

The All-India Boards of Technical Studies advise the Council on all technical matters pertaining to their respective fields. The Boards also establish the standards and basic courses of studies in the various subjects, which serve as models for the various educational organs in the country; the Boards set up the qualifications of those engaged in research works when the National Diplomas and Certificates are granted. The seven Boards are the following: (1) engineering and metallurgy; (2) chemical engineering and chemical technology; (3) architecture and regional planning; (4) textile technology; (5) applied art; (6) commerce; (7) management studies. It is worth noting that even the problems of management and commerce are included as technical problems.

The Regional Committee forms the backbone of the Council for all developments at the first degree and diploma level. It is the function of these Committees to survey the facilities within their respective regions and to determine the needs and to suggest programs of expansion or improvement for consideration by the Co-ordinating Committee of the Council.

Regarding the development of technical education at the post-graduate level and in specialized fields the Council has appointed a Special Committee of the All-India Council for Technical Education.

At the first meeting of the Council held from April to May, 1946, the needs for the expansion of facilities of the post-graduate level was recognized and approval was given to the following points in the recommendation of the Sarkar Committee:

1. To set up four institutions for higher technological education in each of the four zones—namely the North, South, East and West Zones.
2. To set up courses of post-graduate stage in each of these four institutions.
3. That the total number of the students to be admitted to each of these institutions shall be 3,000 (2,000 students for the first degree courses, and 1,000 students in post-graduate courses and advanced researches or other works).
4. That as it is difficult to obtain the requisite staff and equipment, it is desirable to set up first the East Institute, and the West Institute at the same time, but if it is not possible to establish the latter, it should be sub-

sequently set up as soon as possible.

Based upon the above-mentioned plan, the first school opened was the Indian Institute of Technology at Kharagpur, (West Bengal) in 1951. At present, this Institute has on its rolles 1,400 students in the first degree courses, and approximately 100 students in the post-graduate courses. The first degree courses have 12 fields, while the post-graduate courses have 22 fields. Besides, this Institute runs a short term course for those who are engaged in Government Departments and industries. So far such courses are concerned with business administration practice, production control, industrial productivity and operation management. Furthermore this Institute provides a three month short-period course for practice in modern casting which is intended for casting operatives among the employees of Government offices and various industries.

On the establishment of this Institute financial assistance was given from the UNESCO, the U.S.A., the United Kingdom and Australia. The U.S.A. provided the services of a certain number of professors.

The West Institute in Bombay was scheduled to be inaugurated in 1958. Assistance for its facilities and the services of its teaching-stuff is to be given from the Soviet Union under the UNESCO project. The South Institute in Madras and the North Institute in Kanpur were assiduously making preparations for inauguration in 1959. As regards the facilities and the services of expert professors for the institute in Madras, assistance from the Federal Republic of Germany are expected to be given.

The Special Committee set up as a collateral organ of the above-noted All-India Council for Technical Education made recommendation for setting up additional courses of study in technical education of post-graduate stage. Based on this recommendation, the Council selected 15 educational institutions and established 30 courses of study at post-graduate stage more.

The expansion of the Indian Institute of Science at Bangalore by the Central Government deserves special mention as an important development of technical educational policy after the war. This Institute was originally a research institute purely for natural sciences established by Jamshedjee Tata with the endowment of his private properties in 1911. Up to 1946, the Central Government participated in the management of this Institute by merely making a grant of a rather small amount of subsidy, but since that year, the Central Government has given the Institute an immense fund for its overall developments. Based on the recommendations of the All-India Council of Technical Education, the Institute is devoting itself to the

education of students of post-graduate stage enrolled in the Institute. At the present time some 400 students of post-graduate stage and research personnel are engaged in important task in the various departments of this Institute.

Based upon the interim report of the afore-mentioned Scientific Manpower Committee, the Indian Government carried into effect the following three important projects in 1949:

1. The provision of practical training stipends for graduates and diploma-holders in engineering and technology.

2. The provision of research training scholarships at universities and other institutions of equivalent standard.

3. The improvement and strengthening of post-graduate science departments in universities for the provision of research facilities.

The All India Council for Technical Education selected 15 non-Government colleges in the various States and took up the question of improvement and strengthening of these colleges. The Council recommended that these educational institutions should be strengthened through expenditure of 16,200,000 rupees, that entire responsibility for this development should be taken over by the Central Government, further that loans for the construction of hostels for students and maintenance grants for improving salary scale of teachers should be provided. This recommendation obtained the sanction of the Central Government, and by means of it elevation of the qualitative standard in engineering and other technical education in the various States has not only been achieved but also the enrollments of students in these institutions have been increased by 50%.

Again, All-India Council for Technical Education recommended that the State Board of Technical Education and Training, which was to be comprised of all parties interested, including those in the commercial and industrial circles, should be established, that this Board should work for the co-ordinated development of technical education in the various States and for the maintenance of proper standard in the various educational institutions. The Council also drew up a model scheme for the State Board of Technical Education and Training. In pursuance of these recommendations, the State Boards of this kind were successively established in the various States.

4. *Present Condition of Technical Education*

The situation of the progress of institutions at the schools and collegiate

stage which were engaged in the field of technical education during the First 5-year Plan was as follows:

Table 1. Situation of Technical Education in the Period of First 5-year Plan

Year	Number		Pupils & Students (in thousands)		Direct Expenditure (in million rupees)	
	Schools	Colleges	Schools	Colleges	Schools	Colleges
1951-52	454	35	36	15	13.9	16.7
1952-53	478	39	43	16	14.5	17.3
1953-54	484	44	45	19	14.5	18.6
1954-55	538	47	56	21	18.8	20.7
1955-56	670	47	66	22	23.3	20.7

Source: "India. A Reference Annual", 1958, p. 108.

The situation of the progress of technical educational institutions above university stage was as follows:

Table No. 2 (A) The Situation of Engineering Studies (1947-1955)

	1947	1950	1951	1952	1953	1954	1955*
(1) *Degree Level*							
Number of Institutions	28	37	41	42	42	42	43
Output (i.e. number passing out final examination)	950	1,700	2,163	2,426	2,286	2,602	3,000
Intake (i.e. number joining 1st year class)	2,520	3,337	3,893	4,209	4,436	4,457	5,000
(2) *Diploma Level*							
Number of Institutions	41	61	64	65	66	70	83
Output	1,150	2,146	2,257	2,332	2,505	2,982	3,472
Intake	3,150	5,350	5,480	5,786	6,550	7,619	8,000

* Estimated.

The institutions for technical education in India may be classified as follows:

(A) Under-graduate and Post-graduate Courses

These are intended for the training of leaders or administrative and

Table No. 2 (B) The Situation of Other Technologies (1947-1955)

	1947	1950	1951	1952	1953	1954	1955*
(1) *Degree Level*							
Number of Institutions	16	24	25	25	25	25	25
Output	320	498	530	530	594	605	700
Intake	420	782	895	975	1,014	1,011	1,050
(2) *Diploma Level*							
Number of Institutions	20	31	36	36	36	36	36
Output	290	332	369	323	242	415	428
Intake	520	553	731	713	663	694	700

* Estimated.
Source: G. K. Chandiramani, "Technological Education in India," 1956, pp. 18-19.

managerial personnel in the technical fields. The duration of the Bachelor's course is 3-4 years, and that of the Master's course and the Doctor's course is two years respectively. There are various types in these kinds of educational institutions, namely, (1) part of the university, (2) polytechnics, (3) monotechnics (sugar-refining, textiles, hides and leather, pharmaceutics, etc. in each of which specialization is made); and (4) the technical institute. Among the technical institutes the following may deserve a special mention: the Indian Institute of Science, Bangalore, established in 1911, the Indian School of Mines and Applied Geology, Dhanbad, established in 1926, the Harcourt Batler Technological Institute, Kanpur, established in 1921, the Indian Institute of Technology, Kharagpur, established in 1952. These institutions are engaged in the education of men of ability along with the pursuit of research works; all of these institutions, being unaffiliated to any of the universities, grant their own diplomas, which are recognized or par with university degrees.

(B) Diploma and Certificate Courses

These courses are intended for the training of technical supervisors (foremen and overseers, etc.). Stress is laid on practical training and the duration of the courses is from three to four years. There are several tens of these institutions at the present time.

(C) Schools for Operatives.

There are two types of schools for operatives; (1) arts and craft schools and (2) technical and industrial schools. In 1954-55, there were 382 schools

of the first type and 395 of the second type. The arts and craft schools devote themselves to training in such particular craft or minor cottage industries as weaving, dyeing and printing, carving, tanning, metal-work, smithy, carpentry, pottery, cane-work, etc. The technical and industrial schools devote themselves to training of young efficient operatives.

In the First 5-year Plan an outlay of approximately 230 million rupees was appropriated for the promotion of technical education, but in the second Five-year Plan that of 487 million rupees was appropriated.

The Planning Committee which is charged with the task of constructing Indian economy appointed the Engineering Personnel Committee, to make a general assessment of the shortage of supervisory and higher grades of engineering personnel anticipated at the end of the Fist 5-year Plan, and to estimate the probable requirements in these grades for implementing the Second 5-year Plan in the principal fields of national development. This Committee estimated that the shortage in technical personnel would be 1,800 graduates and 8,000 diploma-holders by 1960-61. It recommended that in order to fill the gaps between demand and supply, 18 more engineering colleges and 62 more polytechnics should be established in different parts of the country. According to the estimate of the Committee these new institutions would make available about 2,794 additional seats for degree courses and 8,220 additional seats for diploma courses in civil, mechanical, electrical and electrical communication engineering. Subsequently the Union Government of India, the Planning Committee and the All-India Council for Technical Education examined the matter in detail and arrived at the conclusion that under the present circumstances, the best course for the expansion of technical education of this country was to increase the training capacity of existing institutions as much as possible and that the new institutions should be established only if found necessary. Accordingly, in order to yield about 2,570 additional seats for degree courses and 4,890 additional seats for diploma courses, a scheme for expanding the training capacity of the 19 existing engineering colleges and 50 polytechnics has been formulated and is now in the course of implementation. Further, in the Second Five-year Plan it has been decided to establish 8 engineering colleges and 31 polytechnics of which 6 of the former and 18 of the latter have already begun to fulfill their functions.

Efforts are being made in giving practical trainings to the graduates of colleges and universities and to the diploma holders by industrial circles. In 1957-58, 900 places for training for college and university graduates

and 900 similar places for diploma holders were secured by industrial firms, and by various governmental departments, etc. Besides, measures have been taken to train an appropriate number of teachers in higher technical institutions under the guidance of competent teachers.

(Additional Note) The literature which served as reference materials directly in the preparation of three chapters which deal with the industrial structure and industrial education in India is as follows:

Ministry of Education, "Education in Universities in India, 1947-48," 1950.

Ministry of Education, "A Review of Education in India during 1949," 1950.

Ministry of Education, "District-wise Distribution of Primary and Secondary Schools in States, 1948-49," 1951.

Ministry of Education, "Rural Institutes, A Report of the Committee on Higher Education," 1955.

Ministry of Education, "Teachers' Handbook of Social Education," 1955.

Humajun Kabir, "A Programme of National Education for India," "Eastern Economist Pamphlets," 1953.

S.N. Mukerji, "Education in India, Today and Tomorrow," 1957.

Humayun Kabir, "Education in New India," 1956.

T.N. Siqueira, "The Education of India, History and Problems," Fourth Edition, 1952.

C.K. Chandiramani, "Technological Education in India," 1956.

UNESCO, "The Teaching of the Social Sciences in India," 1956.

The Times of India, "Directory and Year Book," 1956-57.

The Publications Divisions, "India, A Reference Annual," 1957 and 1958.

Planning Commission, "Review of the First Five Year Plan," May, 1957.

Planning Commission, "Second Five Year Plan," 1956.

CHAPTER V

Industrial Structure and Vocational Education in Thailand

FUKUO KAWATA

1

The industrial structure of a country may be studied from various points of view, but in this article we shall limit our study to two points; i.e. (1) the distribution of the economically active population and (2) the composition of net (or gross) domestic product by industrial origin.

According to the censuses of 1937 and 1947 and to the demographic survey of 1954, more than 80% of the economically active population engage in agriculture, forestry and fishing, (or primary industry by the classification of Colin Clark.) This tells us clearly that Thailand is overwhelmingly an agricultural country.

Next to agriculture come commerce and services. (or tertiary industry). The manufacturing industry (or secondary industry), which usually absorbs a large proportion of the population in advanced countries, takes only 2% of the economically active population in Thailand. (See Table l)

The composition of net domestic product by industrial origin reveals to us that the share of agriculture, forestry and fishing (or primary industry) had been the largest before 1956; the tertiary industry had been second to the primary industry before 1956, but since 1956 the former slightly exceeded the latter.

The secondary industry had been increasing its share since 1947, but it still registered less than 20% in 1957. (See Table 2)

When we compare the distribution of the net domestic product in each industrial group, we find that the share of the primary industry tends to

Table 1. Distribution of the Economically Active Population by Industry (in Thousand)

Industry	1937		1947		1954	
		%		%		%
0. Agriculture, forestry, hunting and fishing	6,044.5	88.6	7,623.2	84.8	9,020.0	88.0
1. Mining & quarrying	17.5	0.2	4.8	— (0.05)	19.2	0.2
2-3. Manufacturing	108.7	1.6	195.9	2.2	212.5	2.1
4. Construction	22.8	0.3	8.1	0.1	28.4	0.3
5. Electricity, gas, water & Sanitary sevices	1.6	—	2.2	—	4.7	— (0.04)
6. Commerce	303.5	4.5	707.0	7.9	463.2	4.5
7. Transport, Storage and Communication	57.9	0.9	65.9	0.7	84.5	0.8
8. Services	266.9	3.9	273.7	3.1	393.1	3.9
9. Activities not adequately described	—	—	111.3	1.2	23.4	0.2
Total	6,823.5	100.0	8,992.1	100.0	10,249.8	100.0
0. Primary Industry	6,044.5	88.6	7,623.2	84.8	9,020.0	88.0
1-5. Secondary Insudtry	150.7	2.1	211.0	2.3	264.8	2.6
6-8. Tertiary Industry	628.3	9.3	1,046.6	11.6	940.8	9.2

Source: Statistical Year Book of Thailand, B. E. 2482-87 (1939-40 to 1944) (No. 21), and 2488-98 (1945-1955) (No. 22).
Year Book of Labour Statistics, International Labour Office, Geneva.

decrease, while that of the secondary industry increases. The share of the tertiary industry had been increasing year after year since the end of the war, and at last exceeded its prewar level in 1956 and 1957.

When we calculate the gross domestic product per caput in 1954 by each industrial group, it is made clear that the secondary industry yields the largest amount, reaching twice the amount of the tertiary industry while the primary industry the smallest is only half the average amount of industries. (See Table 3)

In order to raise the level of the gross domestic product per caput, it is, of course, necessary to increase the productivity of labour in all in-

Table 2. Composition of Net Domestic Product according to Industrial Origin (%)

Year	Primary Industry	Secondary Industry			Tertiary Industry			
	Agri-culture, Forestry and Fishing	Mining	Manu-facturing	Const-ruction	Transpo-rtation, Com-munica-tion, Utilities	Whole-sale and Retail Trade	Public Admini-stration and Defence	Other Services
1938-39	45.6				3.5	26.1	4.9	6.0
		13.1			40.5			
1947	60.3				1.3	15.3	3.2	9.3
		10.6			29.1			
1950	57.2				1.3	15.1	4.1	7.5
		14.8			28.0			
1952	48.8	1.9	11.7	3.1	4.1	15.5	4.5	10.3
		16.7			34.4			
1954	43.0	1.7	12.6	3.0	5.6	17.3	5.0	11.7
		17.3			39.6			
1956	40.4	1.7	12.8	3.4	5.6	19.6	5.9	10.6
		17.9			41.2			
1957	38.6	1.6	13.7	4.1	6.0	19.5	—16.5—	
		19.4			42.0			

Source: United Nations, Economic Survey of Asia and the Far East (1958 & 1959).

dustries by improving the technique of production. Moreover, it is also desirable to change the industrial structure, laying greater stress on those branches of industry which yield the largest output per caput. This means the expansion of secondary industries, as well as the improvement of agricultural technique.

Agriculture in Thailand is mainly small-scale farming with family or communal labour. Most farms range in size from about six rai (1 rai = 0.16 hectare) in well-irrigated areas in the North to 40 or 50 rai on poor "upland", which means any land not flooded for wet rice cultivation. There are few

Table 3. Gross Domestic Product per Caput in 1954 (in baht)

Industry	Amount
Primary Industry	1,548
Secondary Industry	21,511
Tertiary Industry	11,575
Average of All Industries	3,167

Note: Primary industry includes agriculture, forestry, hunting and fishery.
Secondary industry includes mining and quarrying, manufacturing, construction electricity, gas and water services.
Tertiary industry includes transportation, storage and communication, wholesale and retail trade, and services.
Source: United Nations, Year Book of National Accounts Statistics, 1958.
International Labour Organization, Year Book of Labour Statistics.

large commercial farms. Most cultivators own their land and they cultivate their land by traditional techniques.(1)

Among the various crops, rice is so predominant that Thai agriculture may well be called a rice monoculture. (See Table 4)

Rice is not only the staple diet of the Thai people, but also the principal export product of the nation.

Although rice is the mainstay of the Thai national economy, it is feared that Thailand has been crowding the margin for rice development. The prospects for growing more rice appear to depend on improving yields rather than on extending the cultivated areas, and it appears to be doubtful whether the opportunities for employment in rice farming will expand in proportion to output. There arises the "spectre of rural unemployment".(2)

Diversification of agriculture and industrialization may be effective means of reducing the pressure of rural unemployment.

It is suggested by the Mission organized by the I.B.R.D. at the request of the Government of Thailand (IBRD Mission) that the basic objectives of Thailand's agricultural policy should be:(3)

1) to develop the large possibilities that exist for further expansion of rice production by the use of modern techniques, especially in the Chao Phya

(1) IBRD Mission, ibid. p. 33.
(2) IBRD Mission, ibid. p. 34-35.
(3) IBRD Mission, ibid. p. 35-36.

Table 4. Primary Production at Wholesale or Farm Value, 1956
(in million baht)

Product	Value	%
1. Agricultural Crops	9,708	64.7
Paddy	6,334	(37.2)
Upland Crops:	1,263	(7.4)
Sugar Cane	437	
Cassava roots	356	
Maize	133	
Vegetables	132	
Fruits, fresh	126	
Oilseeds and Coconut products:	1,244	(7.2)
Copra	828	
Groundnuts	222	
Castor beans	75	
Fibres:	373	(2.2)
Cotton	137	
Raw Silk	122	
Kapok	79	
Rubber	1,522	(9.0)
Condiments, etc.:	295	(1.7)
Garlic	102	
2. Forestry products:	1,162	6.8
Teak	230	
Lac & Lac seeds	257	
3. Livestock and Products:	2,361	13.9
Swine	900	
Poultry	271	
Eggs	912	
4. Fishery products:	2,482	14.6
Fresh water fish	462	
Marine fish	684	
Grand Total	17,015	100.0

Source: Agricultural Statistics of Thailand, 1956.

Plain;
2) to take advantage of the major opportunities for agricultural development that are to be found in Southern Thailand, with particular emphasis on the possibilities of this area for the expansion of rubber production to many times its present level.
3) to improve the agricultural economy of the North-east through various means, including especially the encouragement of a steady shift in the cropping pattern of the North-east, with less emphasis on rice and greater emphasis on rain-fed upland crops and on pasturage and livestock; and
4) to foster a more diversified agriculture generally, and particularly to facilitate and encourage the double cropping of rice lands in the Chao Phya Plain, and to develop the cultivation of rain-fed crops in the northern part.

The manufacturing industry in Thailand is chiefly carried on by small and medium-sized establishments. Much family labour is used and standards of hygiene and safety in the workshops are generally low. A few large establishments exist in such fields as tin-mining, cement, sugar, tobacco, soap and weaving (including gunny bags.)

The most efficient of these are, or recently have been, under foreign management, while the most modern have been erected, directly or indirectly by various government organizations.(4)

The growth of private manufacturing in the post-war years has been remarkable. Main private industrial lines and the numbers employed in 1957 are given in Table 5.

The average number of workers per establishment is only 20. Even the largest number is about 130 in the ceramic industry. The rice-milling industry, which is the largest in the number of establishments employs only 12 workers on the average.

Moreover, since rice-milling and sugar production are seasonal, and saw mills employ much labour in the forests, the workers engaged in them cannot be regarded as full-time industrial employees similar to those in the engineering occupations.(5)

Of 15,960 establishments in Table 5, only 306 or about 2% were classed as large, i.e. with more than 50 employees.(6)

The Table indicates the importance of the industries auxiliary to agri-

(4) IBRD Mission, ibid. p. 88-89.
(5), (6) IBRD Mission, ibid. p. 89.

culture and forestry; such as rice and saw milling, sugar and flour (which includes tapioca) industries.[5] This shows one of the features of the manufacturing industry in underdeveloped countries.

Table 5. Number of Private Industrial Establishments and Workers employed in Thailand in 1957.

Industrial Establishment	Number of Establishments	Number of Workers	Average Number of Workers per Establishments
Saw-milling	1,736	130,154	75.0
Rice-milling	4,921	58,459	11.8
Printing	484	17,288	35.7
Sugar mills	1,521	12,685	8.3
Weaving	409	12,470	30.5
Flour milling	1,336	11,982	8.9
Ceramics	90	11,694	129.9
Engine repair	528	7,219	13.6
Foundry & Machinery Shops	810	6,931	8.5
Smithies	778	3,803	4.9
Ice factories	338	3,199	9.4
Aerated beverages	143	1,946	13.6
Others	2,816	38,108	13.5
Total	15,960	315,938	19.8

Source: A Public Development Program for Thailand, published for IBRD by the Johns Hopkins Press, p. 90.

The government controls 60 establishments (including 15 distilleries), of which perhaps 40 can be cleassd as large, in the sense of employing more than 50 workers.

It is to be noted that in the case of private establishments, 2% of the total are classed as large, while in the case of governnment establishments about 67% (or 40 establishments out of 60) can be classed as large.

This tells us that the size of the Government controlled enterprises on the average is far larger than that of private ones.

Though large in size, the Government enterprises are less efficient than private ones. It is pointed out by the IBRD Mission that, "In practice, all

of the state industries, except the monopolies, have proved unprofitable by commercial standards."(7)

Lack of managerial as well as technical skill is one of the chief reasons for the inefficiency of the manufacturing industry in Thailand. The training of personnels with technical knowledge and managerial skill is therefore necessary for the expansion of the manufacturing industry of Thailand. The needs for training may be met by sending able young students abroad and many students have been sent abroad, but this is expensive as well as self-perpetuating.

In 1937 the total of Thai students sent abroad was 720; by 1957 it had increased to 1956. The costs of supporting these students abroad including various incidental expenditures aggregated around 35 million baht annually. This is well over twice the annual operating cost of Chulalongkorn University, and would suffice to pay for four years of education at Chulalongkorn for 3,365 students. (ibid, p.188)

It is, therefore, necessary to establish at home schools and facilities for technical and managerial training.

2

The general level of education of a country can be indicated by the ratio of illiteracy of its people. The ratios in South and South-east Asian countries are shown in Table 6.

Table 6. Ratio of Illiteracy of South and South-east Asian Countries. (%)

Country	Year	Age	Male	Female	Total
India	1951	over 10 years	70.4	90.6	82.1
Federation of Malaya	1947	over 15 years	43.0	83.4	61.7
Thailand	1947	over 10 years	32.6	59.0	46.3
Burma	1954	over 10 years	19.4	64.9	42.7
Ceylon	1946	over 5 years	29.9	56.2	42.0
Philippines	1948	over 10 years	34.8	40.7	37.8

Source: United Nations, Statistical Year Book.

From Table 6, we learn that the ratio of illiteracy of Thailand is much lower than that of India and of the Federation of Malaya, But slightly higher

(7) IBRD Mission, ibid. p. 92.

than that of the Philippines, and is almost equal with that of Burma and of Ceylon.

It is, however, a matter of great concern that about a half of the Thai people over 10 years of age are illiterate. The Government has been doing its best to reduce illiteracy. This is shown in the relative position of the expenditure for education in the Government budget.

In 1948, the expenditure of the Ministry of Education ranked first, accounting for 15% of the Government budget. Later the change in international situation caused the expansion of expenditures in the Ministries of Defense and of Interior. Now the Ministry of Education ranks third, after Defense and Interior, in terms of appropriations, and has accounted for 15% of total Government expenditures in recent years. The share of gross national product devoted to education averaged a little over 2½% from 1956.(1)

Compared with neighbouring countries at a roughly similar stage of development, Thailand's outlay on education does not appear to be excessive. In per caput terms, it is higher than that of Burma, but much lower than that of Ceylon or the Philippines.(2)

According to the new System of National Education, which was put in force in 1951, the education of Thailand is divided into the following five levels;)[3]

(1) Kindergarten Level,
(2) Primary Education,
(3) Secondary Education,
(4) Pre-university and Higher Vocational Education,
(5) Higher and University Education,

(1) Kindergarten level deals with instruction prior to the compulsory stage.

(2) Primary education which is compulsory comprises four years of study. According to the Primary Education Act, children whose ages are between 8 and 15 years must attend primary school, unless and until they have completed the primary course.

(3) Secondary education is divided into three courses: (a) Primary Extension, (b) Secondary Education and (c) Secondary Vocational Education.

---

(1), (2) IBRD Mission, ibid. p. 175.
(3) Statistical Year Book of Thailand, 1945-1955.

(a) Primary extension consists of instruction in general subjects beyond primary level as well as instruction in practical arts which are the basic knowledge of the people of Thailand. The primary extension course requires three years of study.

(b) Secondary education consists of instruction only in general subjects which are deemed necessary to prepare students for pre-university education or vocational education. The secondary course is further divided into junior secondary and senior secondary, each consisting of three years of study.

(c) Secondary vocational education consists of instruction and training in certain trades for the required future career. The secondary vocational course also has two grades, i.e. junior secondary vocational and senior secondary vocational.

(4) (a) Pre-university education consists of instruction in subjects which are necessary for the university or higher vocational education. The pre-university course requires two years of study.

(b) Higher vocational education consists of instruction and training in higher vocational courses for future careers or for study in universities.

(5) University:

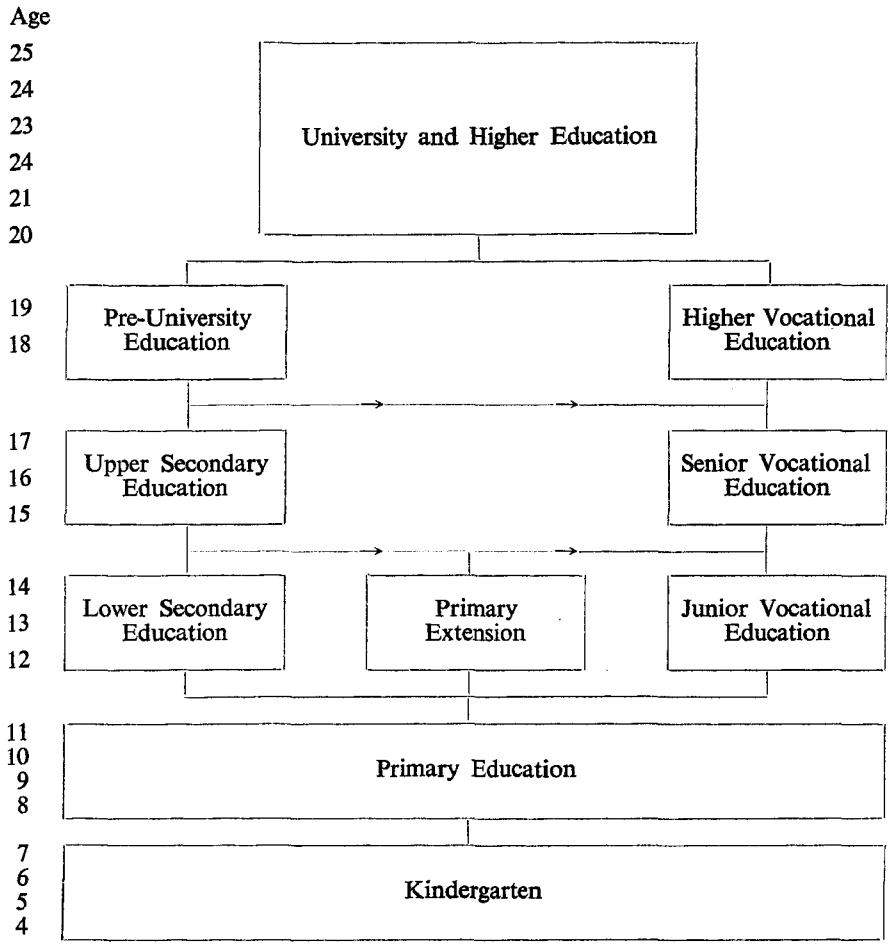
At present there are five universities, all located in Bangkok.

1. Chulalongkorn University, provides higher education in arts, education, library, science, engineering, architecture, commerce and accountancy, political science and press journalism.
2. Thammasat University, gives instruction in law, commerce and accountancy, economics, social welfare and political science.
3. The University of Medical Sciences, provides higher education in medicine, pharmacy, dentistry and public health.
4. The University of Agriculture, prepares higher education in agriculture, forestry, fisheries, co-operative science and veterinary.
5. The University of Fine-arts provides education in drawings, sculpture, decoration, architecture and history of art.

The period of attendance required to complete a Bachelor's degree in each university varies from 4 to 6 years depending on the field of specialization.

Besids, there are other institutions which provide higher education, such as the Military Academy, the Naval Academy, the Royal Air Force Academy and the Police Academy. Courses offered in these institutions vary from 3 to 5 years.

Diagram of Scheme of National Education



Source: Statistical Year Book of Thailand.

Now let us examine how the education is actually conducted under the above-mentioned educational system.(4) In the primary schools (Pratom),

(4) IBRD Mission, ibid. p. 176.

90% or more children in the compulsory age groups were in attendance between 1945 and 1954. Above the primary school level, the pupil may choose one of the two distinct educational ladders.

(a) The first and much the more popular comprises six years of secondary school (Matayom) of the traditional academic type. Beyond this lie two years of pre-university school, followed by universities.

(b) The second ladder is vocational, leading to the Technical Institute through junior and senior vocational schools.

3

The Government of Thailand has been doing its best to promote vocational education. When we compare the number of students in technical schools per thousand of population in the neighbouring countries of South and South-east Asia for 1953-1956, we find that the position of Thailand is very high, second only to the Philippines. (See Table 7)

Table 7. Number of Students in Technical Schools per Thousand of Population.

1. Philippines	2.6
2. Thailand	2.0
3. Indonesia	1.1
4. Federation of Malaya	0.7
5. Southern-Vietnam	0.5
6. India	0.4
7. Burma	0.3
8. Ceylon	0.2

Source: United Nations, Economic Survey of Asia and the Far East, 1958. p. 45.

There are three types of secondary vocational schools:(1)

a) Junior secondary vocational schools admit students who have completed the primary course. It takes two or three years of training in certain trades.

b) Senior secondary vocational schools admit students who have passed the junior final examination (third grade of secondary education) and offer a three-year course of study.

(1) Statistical Year Book of Thailnd, 1945-1955.

c) Higher vocational schools admit students who have finished the senior secondary vocational schools and offer a three-year course of study. Such students are also eligible to go to the Technical Institute for three to five years of work.

Graduates of upper secondary schools may also enter the Technical Institute rather than prepare for a university.

The Technical Institute was established in 1952 with the help from the ICA. This Institute is located in Bangkok with three up-country branches (Korat, Songkla and Chiengmai). It has expanded rapidly and promises to be a first-rate source of highly skilled and supervisory workers for industry and various government departments.

Ninety percent of pupils who seek education beyond the elementary grades choose the academic ladder, which alone provides admission to a university. The remaining ten percent enter secondary vocational schools. In junior vocational schools, pupils spend most of their three-year period in carpentry, in addition to academic subjects. In the senior vocational schools, mental work, building construction, drawing, mechanics and business training, as well as tailoring, dress making and home economics are included as vocational subjects. (See Table 8) Vocational training in agriculture is provided in specialized schools in the country.(2)

Recently there have been important changes in junior vocational education.(3)

"In 1953, the Ministry of Education began to replace junior vocational schools with primary extension schools. The curriculum of the latter lays greater stress on academic subjects, and although some vocational work is given, it demands less of the pupil's time than does the junior vocational course, and is more varied in character. By 1957, there were 569 primary extension schools, with at least one in each of the country's 448 administrative districts (amphurs).

"This change is probably all to the good, for junior vocational schools have little educational value. Their vocational content amounts only to the most elementary carpentry, and the academic work is inferior.

"Toward the end of 1957, the Ministry of Education proposed a further change that would, in effect, replace both junior vocational schools and the first three years of Matayom with primary extension schools. The present

(2) IBRD Mission, ibid. p. 176.
(3) IBRD Mission, ibid. p. 177.

Table 8. Vocational Education Enrollments of Thailand

	1948		1949		1950	
	Male	Female	Male	Female	Male	Female
1. Primary Vocational Education						
Total	4,067	2,641	3,571	2,260	6,679	4,536
Carpentry	1,927	—	2,191	—	4,328	—
Agriculture	1,759	—	724	—	1,146	—
Tailoring	—	—	—	45	—	200
Weaving	—	152	—	88	—	168
Female Handicarft	—	2,364	—	2,127	—	4,168
Sewing	—	125	—	—	—	—
Shipbuilding	24	—	29	—	38	—
Metallurgy	39	—	58	—	96	—
Forging	40	—	53	—	59	—
Leather Sewing	81	—	80	—	73	—
Hair Cutting	153	—	316	—	836	—
Clay Modelling	44	—	39	—	32	—
Accounting	—	—	21	—	30	—
Stenography, Typewriting	—	—	26	—	41	—
Umprella-making	—	—	34	—	—	—
2. Medium Vocational Education						
Total	978	643	2,615	2,103	1,706	1,108
Carpentry	889	—	1,293	—	671	—
Agriculture	89	—	1,322	—	1,035	—
Female Handicraft	—	643	—	2,103	—	1,108
3. High Vocational Education						
Total	2,431	536	2,498	628	3,150	666
Teacher-training	28	23	57	58	99	71
Agriculture	—	—	69	—	164	—
Commerce	613	310	391	210	479	170
Foreign Language	507	—	517	—	577	—
Engineering	275	—	369	—	433	—
Building Construction	318	—	504	—	802	—
Artistic Manufacturing	463	40	438	90	404	96
Female Handicraft	—	163	—	270	—	329
Tailoring	127	—	153	—	192	—
(1)-(3) Grand Total	7,426	3,820	8,684	4,991	11,535	6,310

Source: Statistical Year Book of Thailand, 1952.

sequence of elementary, secondary and college preparatory schooling, 4+(3+3)+2, is to give away a to new sequence of 4+3 years (of) elementary and junior secondary plus 3+2 years of senior secondary and college preparatory. The junior secondary would become, in effect, a continuation of the primary curriculum."(4)

These changes may be useful in the improvement of both general and vocational education. Because it is better to give vocational education after at least 7 years of general education, instead of 4 years. On the basis of this higher general education, vocational education can more effectively be performed.

4

We have thus far examined the industrial structure of Thailand and her educational system. We have found that in order to raise the level of output per caput, her industrial structure should be changed by shifting weights from the primary to the secondary industry. The Mission also points out that, "it is essential for the statisfactory future development of Thailand that the relative importance of manufacturing activity in the economy should be increased." (IBRD Mission, ibid. p. 94-95)

For this purpose technical and managerial skills should be improved through the expansion of education, both general and vocational.

The Government has been doing its utmost for the diffusion of education. Aids from foreign countries, such as the United States, and international organizations, such as UNESCO have been given for the maintenance and expansion of educational facilities. It will naturally take a long time before these efforts bear appreciable fruits, but with the gradual rise of educational standards the productivity of labour in Thailand will steadily be improved, and a higher level of income per caput will be attained.

(4) IBRD Mission, ibid. p. 177.

CHAPTER VI

The Industrial Structure and Industrial Education in the Philippines

TEI-ICHI YAMASAKI

1

The Philippines are situated in Southeast Asia between the South China Sea and the west Pacific Ocean. It consists of more than seven thousand islands. Among them Luzon is the largest in the north and Mindanao in the south. It has an area of about 299 thousand square kilometer and a population of some 21,000,000 (1955 estim.) and therefore has population density of about 70 persons per sq. km. The racial composition of the inhabitants of the country is complex. Besides small number of primitive Negrito, many people are racially Palaeo-Malay who are uncivilized people as those in the northern mountain region of Luzon. Among the civilized-Malay there are the Mohamedan Moros who inhabit the southern parts of Sulu Islands and Mindanao. But the greater parts of what is known as Filipinos, who profess the Catholic faith, have attained a pretty high degree of culture.

The Philippines were conquered by the Spaniards in 1565, and after the Spanish American War of 1898, the Philippines became a part of the United States of America. In 1946 the Philippine people achieved their independence and established the Republic of the Philippines. However, even at the present time, the country is dependent upon the United States economically and, as a consequence, for the internal developments of the country they rely upon the capital and technical aids of the United States, which maintains a military base in the country.

The city of Manila, which has a good harbor on the island of Luzon, is the largest city in the Philippines with an estimated population of 1,200,000 people. It is the great center of trade and industries, communications, and

culture. The capital of the country was recently moved to the newly constructed city of Quezon.

English and Spanish are commonly used by the Philippine people in government and commerce. Some 70 native languages are spoken, of which 9 are of major importance. Based upon the Tagalog dialect, which is one of the nine principal dialects, a new national language was proclaimed by the National legislature, and it is now being taught in all schools of the country. Spanish is also spoken while the English language is being used as the most important medium of education in all schools throughout the country. Those who speak English among the population number approximately 7,000,000 while those who speak Spanish are said to number approximately 350,000. According to statistics compiled in 1952 approximately 70% of those in the age bracket of 10 years or more were able to read and write. The rate of illiteracy of the Philippine people among the various nations of Southeast Asia is the lowest. Education in the Philippines is thus widely diffused, and coeducation of the both sexes prevails in the schools.

The most important industry of the Philippines, which lies in the tropical monsoon region of Asia, is agriculture. The agricultural population comprises 69% of the total industrial population of the country. Rice, abaca (Manila hemp), copra, sugar canes, corn and tabacco are the chief products. Philippines are the main production area of copra and coconuts oil in the world. Exports of these two products and abaca comprise nearly one half of the total exports. Although exports of sugar decreased since the War, they still amount to considerable figures, most of which are exported to the United States. Thus in agriculture, plantations flourish, which lay their chief emphasis on the production of goods for exports. And there is a shortage of foodstuffs, and rice is imported from Thailand and wheat and dairy products from the United States, and the foodstuff imports comprise 15-20% of the total imports. In the production of minerals gold, copper, iron ores and chromite are the chief products. Mangnese is also produced. In 1954 a uranium mine was disovered at Larap in southern Luzon. As industrialization was promoted in post-war years, the number of plants and factories has rapidly increased, but industrial progress is handicapped by the lack of fuel. The annual coal production is about 130,000 tons (1955). Development of hydro-electric power has been retarded due to the fact that the rivers are small and short and as there are rainy and dry seasons. According to investigations made in 1954, the largest number of plants and factories are the rice mills, followed by sugar refineries, coconut-oil mills, cigar cand cigarette

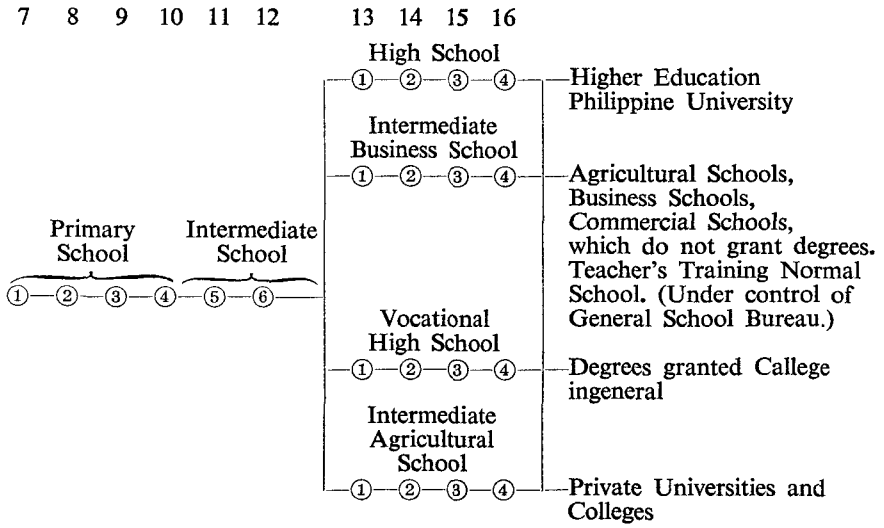
factories, leather shoes factories, rubber shoes factories, etc., and almost all of these are processing of agricultural products. There are four cement plants, and one hydroelectric power plant. The majority of the industries of the country are the household industry, which carry on the work of making embroideries, hats, woolen-fabrics, mattings, and chinawares. Since 1951, there has existed an excess of imports over exports with the consequent unfavorable balance of trade annually. The conditions of the industries of the country are well reflected in the various aspects of education.

2. The Educational System

The educational system of the Philippines comprise the following:

Primary Education
Secondary Education
Vocational Education
Higher Education
Special Education

The educational system, with regard to the school attendance ages are as shown in the following table:



The statistics on the kinds of schools are as shown in the following table. Due to the American influence, the number of colleges and universities is large and the fact that there are over 400 colleges and universities excites

one's attention. A point of difference in comparison with schools in Japan is that almost all of these colleges and universities are private institutions and the sole public (national) institution of higher learning is the Philippine University.

Summary of School Statistics, 1951/52

Level of education and type of school	Institutions	Teachers	Pupils	
PUBLIC SCHOOLS, 1951/52				
Primary			Total	Female
Primary schools	16,365	52,412	2,923,874	1,387,795
Intermediate schools	6,276	24,308	872,307	412,235
Secondary				
General secondary	285	6,299	180,644	
Trade and vocational ①	28	② 866	24,104	
Rural and agricultural ①	29	444	10,958	94,398
Fishery schools	—	② —	138	
Normal schools	1	7	309	
Higher				
Normal colleges	7	98	3,017	
Trade: Teacher's course	—		795	
Technical course	3	104	1,424	2,472
Agricultural teacher's course ③	—	2	70	
Commercial	1	21	587	
Nautical	2	5	99	
University of Philippines ④	1	567	7,603	—
Special				
School for the deaf and dumb	1	20	150	—
PRIVATE SCHOOLS, 1952/53				
Pre-school				
Kindergartens	128	145	8,413	—
Primary				
Primary schools	643	3,555	92,141	—
Intermediate schools	607		43,828	—
Secondary				
General secondary	1,245	10,253	362,469	—
Vocational schools	397	952	32,989	—

Higher Colleges and universities	410	6,028	169,859	—

① Including home economics
② Fishery teachers are included with trade and vocational
③ Including farm mechanics courses
④ Not including two non-collegiate schools with 441 students

Source: Philippines Ministry of Education and Bureau of Private Schools.

3. Aim of Industrial Education

There had been a general feeling of aversion toward manual works generally during the colonial days under the Spanish rule. As a consequence, though various manual training courses were provided, they were not put into practice, and those who were not engaged in manual works were looked up to as refined. The aversion towards the manual works naturally combined with the social order and it has exerted its influence upon the national economy.

With the coming of the Americans the idea of respect for labor of all kinds was introduced. It was something utterly new to the Philippine people. A belief in social efficiency was at once woven into the pattern of education. An appropriation for establishment of vocational schools in the city of Manila was passed, and establishment of agricultural special (vocational) school in the Island of Negros was given approval.

With the passing of years industrial education was systematized and developed. Emphasis was laid on the various arts and crafts and on practical commercial business, horticulture, and household economy. Later on further advanced vocational courses of intermediate standing were established. The Central Luzon Agricultural School was early established. The legislative act No. 3377, which may be said to be a vocational assistance law, passed in December, 1927, was intended to promote vocational education of boys and girls of over 14 years of age, who were already engaged in agriculture or in commercial or in industrial pursuits. In connection with these phase of the matter partial vocational education was put into practice for a certain period in the schools generally. In the debate on the bill in the legislature there were already in existence commercial schools, and schools for household economy, trade, commerce and agriculture in the various parts of the country. The law in question may be said to be none other than the official recognition of vocational educational policy which had been put into effect by the Bureau of Education.

Moreover, ten years later, bills providing for administration of agricultural school of the type of trading school or of the Central Luzon Agricultural School aiming at vocational education were authorized. These schools came to be established in suitable localities, or changes were effected in the schools already in existence, or were newly established so that they came to exert influence upon agriculture and commerce and trading as the basic industries of the country.

4. Special Schools—Schools for Vacational Training

Special schools in the Philippines, namely, the schools offering vocational education, excepting the schools for the deaf and dumb, are the following:

(1) The Philippine Normal School, which is the school for training primary school teachers.

(2) The Philippine School of Arts and Trades, which is the school for arts and various trades, and which later became the school for training teachers for vocational schools.

Along with the above-mentioned normal school, it is the oldest in point of establishment, and its curricula appear to have been revised in order to meet the requirements of society. Its educational aim was the training of youths engaged in the various trades as a means of earning their living. Later, however, it was discovered that the purpose aimed at was not an appropriate one; namely, it became known that the training only for trade that are useful is insufficient and that as there was a need for training of teachers who are capable of giving guidance in these trades (occupations), its aim was altered accordingly.

Besides, to this school is assigned another important task of making preparations for instiling the basic principles of democracy; that is to say, to implant in the minds of every man the ideal of living by the sweat of his brow. The youths are made to comprehend that they must possess always a high level of education, that they must possess an adequate knowledge of the language; must be found of reading; it is a self-evident truth that without the possession of these qualifications it is futile for them to attain a position of leadership in modern industrial society.

(3) The Philippine Nautical School was reorganized in 1839 by the military government after the occupation of Manila. Its purpose was to train the Philippine people the techniques of operation of ships. The system of instructions was based on that of the Naval Academy at Annapolis. At first Spanish was the language in use, but was later substituted by English.

There were two objectives in the school: first, to instil in the minds of the students through the language the habits of work, and through the general principles of morals to achieve Americanization; secondly, the technique of maneuvering and operation of ships, the technical trainings in ship operation, navigation and other matters. From the fact that the students prior to their matriculation in the school had not received satisfactory preparatory educational training it was considered necessary to make a marked progress in their education.

The school continued to exist until 1907 when it was closed due to errors in administrative control and to the lack of funds, but it was reopened five years later.

Drastic changes in the curricula of the school were made so as to secure a more complete instruction in navigation, techniques of ship maneuvering and in academic subjects in the course of two years. This school sent out many officers for the merchant marine and in the promation of the diffusion of knowledge regarding navigation among the various islands of the country. The Philippine Congressional act of 1928, which granted licenses to first mates greatly enhanced the prestige of the school. The jurisdiction of the school was transferred to the Bureau of the National Defense from that of the Several Education Bureau.

(4) The Philippine School of Commerce was established in Manila in October, 1904, as a result of a change in its name from the Manila Business School to its present name. The primary purpose of the school is to train the personnel required by the Government. The second objective is the training of young employes of both sexes for private busines sfirms. Recently besides such courses as the typewriting, book-keeping and short hand, its curriculum includes intermediate courses, and later secondary curriculum pertaining to commercial subjects was prescribed in order to supplement the education of the students. However due to the shortage of funds the school authorities decided to make the school a Department of the Philippine Normal School. But in June, 1946 it was reopened as a separate institution offering a two year college course.

(5) The School of Household Industries.

The Philippine exports of embroidery goods and laces amounted to 130,000 pesos in 1911. It was not the results of an organized industry, but it represented the work of several thousand women who had developed it into an industry with a limited supply of embroidery goods made available to them being the surplus quantitily from those earmarked for exports. As

exports of embroidery goods and laces into the United States amounted to over 71,000,000 pesos in value in the same year, it became the motive of the Philippine Government for developing the manufacture of embroidery goods and laces with steady markets in the United States. Accordingly the Philippine Congress established the School of Household Industries on January 30, 1912 and passed a bill providing for an appropriation of 100,000 pesos for maintenance of the school. The purpose of the school is to train adult women in such household industries as the making of laces and embroideries. Women trainees who completed the prescribed course of training returned to their respective villages, organized classes and set up centers of such works in order to put their work on a systematic basis.

The school was opened in June, 1912. No prerequisite was required of those applying for admission to the school either in scholastic backgrounds or in other qualifications. However, many of the 800 women students who graduated from the school had completed high school courses. Lace-making and embroidery work were the subjects chiefly taught in this school, and no courses of study, either scientific or literary, were offered; training was given in the selections of designs, study of patterns which met the standard styles, methods of laundry of laces and embroidery works, shipping preparations of goods made, besides special trainings in crocheting. Industrial centers were established by the graduates of the school and the work was widely disseminated among the people in the localities until the school was closed in January, 1916 leaving behind it a career of four years of an efficient work.

(6) The Central Luzon Agricultural School.

Several years before a similar secondary school was established in New York there were to be found students in the Philippines who were already actively engaged in the pursuit of their studies and in earning their living under the direction of Mr. J.W. Thomson. This school was a most singular one, which may well take pride as an educational institution in the Philippines.

The purpose of the school was the training of students for making useful living with the view to supply leaders in industries, who were coming to be in demand. Thus the school aimed at the development of men of character who will become independent and progressive farmers. In order to achieve the objective aimed at of giving an opportunity to healthy and robust students who are able to work and to earn their living expenses, while they are attending the school.

As agriculture is the basic industry of the Philippines practical training

in improved methods of agriculture was undertaken. In order to achieve the development of agriculture by so doing and with the objective of inculcating the idea of the love of the rural life the school was established. Accordingly its curriculum was developed in conformity with such objective so that the students might be taught to learn through their works.

When a youth enters the school, good nutritious foods are prepared and placed before him daily. But he has to redeem the right of sharing the amenities of life thus offered him. The students are thus freed from the lot of suffering from privations, but for each one of them a certain work is assigned, from which no student is exempt. The kind of training offered gives the young people with good opportunities, and as a result it brings about a broadening of their horizon and their physique is invigorated more and more so that later in their lives when they are confronted with duties and responsibilities they may be enabled to endure these hardships.

On the one hand, the school was taking over the task of supplying leaders to the farmers of the neighborhood. It was the distributing center of seeds and young plants, domestic fowls and animals. Moreover the school hospital extended its services to society in sanitation and general welfare in response to demands made upon it. As the value of the scientific methods of agriculture was clearly demonstrated by the school, when the farmers in the neighborhoods of the school harvested an average crop of 60 cavan per hectare, the school had achieved the security of harvesting a crop of 70 cavan per hectare. When it is considered that the average annual crop of the Philippines as a whole was 20 cavan in the same year, the important role played by the school becomes evident. That is to say, as the efficient work performed by the school in actual practice had been demonstrated, schools of this nature came to be established in later years in various parts of the Philippines.

5. Education in the Philippines Since the War

As a result of the destruction wrought by the havoc of World War II approximately 80% of schools in the Philippines was destroyed. But the public school system of the country immediately after the War was rapidly restored. The enthusiasm displayed by the Philippine people in sending their children to school in the years following the War's end was such that nothing could be said to have surpassed it up to the present.

With the reopening of the agricultural schools and of the rural high schools consideration was given to the Department of the Domestic Science in these schools before others. Again from the standpoint of coping with

the scarcity of foodstuffs cultivation of early growing crops, domestic fowls, and fish were promoted, and the various schools devoted themselves to the production of edible crops.

Many of the vocational schools were reopened, and training in such occupations as the serviceing of automobiles, machine shop work, welding, electrical engineering was carried on, while those who were engaged in their respective trades had the right of being entitled to receive remuneration for their works. Further upon completion of a certain period of training they were enabled to find employments in military establishments or in private industrial enterprises. Moreover the school started to manufacture desks, chairs, blackboards, etc. for the use of the public schools.

Since the independence of the Philippines was declared on July 4, 1946, changes in the school curricula were introduced, among which the teaching of the Tagalog language as the national language of the country was enforced in all classes in the schools under the compulsory educational system. Prior to the War the Tagalog language was taught in the third and fourth years only, but it was now made compulsory in all classes.

References:

The Statesman's Year-book.
B. Aldana: The Educational System of the Philippines, Manila, 1949.
A. V. H. Hartenderp: History of Industry and Trade of the Philippines. The American Chamber of Commerce of the Philippines, Manila, 1958.

CHAPTER VII

Industrial Structure and Vocational Education in Indonesia

HIROMASA YAMAMOTO

1

Ever since its declaration of independence in August, 1945, Indonesia has endeavored to realize its aspirations to achieve economic and political independence, and to free itself from the shackle of the Dutch rule, which had lasted almost three and a half centuries. However, the dominant influence of the Dutch colonial rule, which had begun with the establishment of the East India Company in 1602, permeated almost all spheres of Indonesia. In order to achieve her national independence in fact as well as in name, therefore, it is necessary to go through a painful course in the solution of her manifold problems as a truly independent nation. The writer wishes to recognize in the first place the changes which have taken place in the economic and social structures of the country from those of the colonial days since it declared its independence, and secondly, he wishes to stress the necessity for, and the importance of education, especially of vocational education which will enable it to make an all-round progress in the domains of the social and economic life of the nation.

2. Economic Structures

(1) National Income

As it will be clear from a glance at table 1, the most important sector in the Indonesian economy is agriculture which accounts for 56 per cent of its total national income, followed by the trade sector which ranks second, while mining and manufacturing industries are of but little significance.

Thus Indonesia is a typical under-developed country with agriculture as the predominant industry. Its economy may therefore be characterized as monocultural.

The national income of Indonesia is one of the lowest among the nations of the world. (refer to table 2) Moreover, in 1938, the income of Indonesians representing 97.4 per cent of the total population, accounted for 61 per cent of the national income, while 31 per cent of the national income was owned by foreign nationals representing only 3 per cent of the entire population. Again in 1952, the percentage of the national income owned by foreign nationals still comprised 25 per cent of the national income of Indonesia, though the percentages owned by them showed a gradual decrease.(1) Even with possible errors in the estimates of the national income, it seems safe to conclude that the unbalance in the percentages of the national income

Table 1. National Income (in million Rupiahs)

	Value	Agriculture forestry, & fishing	Mining	Manu-facturing industries	Const-ruction	Trans-porta-tion and Commu-nication	Trade	Public admi-nistra-tion	All others
1951	70,498.7	56%	2	9	1	3	15	6	8
1952	81,638.7	56	2	8	1	3	14	7	9

Source: U. N. Statistical Year-book.

Table 2. National Income per capita (in million Rupiahs)

	1938	1951	1952
Net national income at current prices	2,700.0	70,015.4	81,204.0
Net national income at 1938 prices	2,700.0	2,593.0	2,707.0
Population (in millions)	68.4	77.4	78.6
Income per capita at current prices	39.0	905.0	1,033.0
Income per capita at 1938 prices	39.0	33.5	34.4

Source: Biro Perantjang Negara (B. Higgins, Indonesia's Economic Stabilization and Development, 1957.)

(1) S. D. Neumark, The National Income of Indonesia, 1951-1952, 1954.

has continued to exist up to the present among the various races of Indonesia. Nonetheless it is a fact that the economic influence of foreigners is still a considerable one even after World War II.

(2) Foreign Capital

Foreign investments in Indonesia, which amounted to approximately 300 million dollars in 1900, jumped up in 1937 to as large a figure as seven times that of 1900. The main investing countries were the Netherlands, Britain and the United States of America.

Among these nations the position occupied by the Netherlands which had political control was a predominant one (refer to table 3, a, b, c.). The investments of the Netherlands amounted to 73 per cent of all foreign investments in Indonesia, and almost all portfolio investments were in the hands of the Dutch. In addition, the investments of the Netherlands in Indonesia as shown in Table 3 do not include the investments in the tin-mining and coal-mining industries which were operated by the Netherland-India Colonial government. Direct Investments of the Netherlands were concentrated in agriculture, and 45 per cent of the whole direct investments was sunk in plantations which cultivated commercial crops, such as rubber and sugar cane. The total investments in agriculture amounted to 55 per cent of the whole direct investments if the investments in agricultural financing be added to the investment in agriculture. Other important fields of investments were those of petroleum and transportation while the investment in manufacturing industries was of but small significance. From these figures one may well perceive the Dutch administrative policy which had control over Indonesia both politically and economically. Indonesia was assured of its status as the supplier of raw materials to its preponderant country, the Netherlands so as to complement the economic circulation of the Netherlands. But there was no stimulus for the development of manufacturing industries. The monocultural features of Indonesian economy may be attributed to the direction of foreign investments and of the Dutch colonial policy.

In relation to the foreign investment one must not overlook the position occupied by the Chinese in Indonesia. It was estimated that in 1937 Chinese investments in Indonesia amounted to 150 million dollars (the amount was omitted from Table 3). The Chinese exerted a great influence over the exports of commercial crops produced by native agriculture, and the domestic commerce was practically monopolized by the Chinese.

The independence of Indonesia did not necessarily mean their liberation

Table 3. Foreign Investment in Indonesia

Table 3-a. Estimated Total Investment (in million U. S. dollars)

	Business (Direct) Investments	Rentier Investments, Mainly in Government securities	Total
1900	300	18	318
1914	675	68	743
1930	1,600	397	1,997
1937	1,411	853	2,264

Table 3-b. Main Investing Countries (%)

Netherlands	73
Great Britain	14
United States	7
France	2
Japan	1
Germany	1
Italy	1
Belgium	1

Table 3-c. Distribution of Dutch Business Investments by Industries in the 1930s (as percentage of total Dutch Business Investment)

Sugar	15
Rubber	17
Other Agricultural Industries	13
Agricultural Banks	10
Petroleum	19
Shipping	4
Railways and Tramways (private)	6
Public Utilities (private)	4
Manufacturing Industry	2
Miscellaneous	10
	100

Source: H. G. Callis, Foreign Capital in South East Asia, 1942.

from the yoke of foreign capital. Of course the Indonesian government took over many of the Dutch private and government-owned properties and prohibited the Chinese from engaging in retail business in the rural areas. However, Indonesia can not shut out the foreign capital entirely on the contrary, it needs much investment of foreign capital in order to develop and foster its industrialization. Accordingly favorable measures for the introduction of foreign capital were adopted. And also three foreign petroleum enterprises in Indonesia are allowed to operate free from restrictions of government control of foreign exchange. Therefore the influence of foreign capital will persist in Indonesia to a considerable degree.

(3) Agriculture

Agriculture, the mainstay of economic activities in Indonesia, is characterized by the co-existence of estates of great scale, which are administrated by the Europeans, and of small farms cultivated by the natives. The former specializes in the cultivation of commercial crops for exports, while the major part of the latter, which accounts for over 70 per cent of the working population, produces mainly foodstuffs for their own consumption with an average per capita holding of 0.7 hectare of arable land. The cultivation of commercial crops by the native farmers is confined to supply the demands in cash on a self-sufficiency basis, though the proportion of small farms growing commercial crops has shown a gradual increase recently. In contrast the estates owned by the Dutch and other Europeans cultivate commercial crops so as to enable them to export them to overseas markets. Before World War II these estates supplied 60 per cent of exports of all agricultural products, though only 7 per cent of all cultivated lands belonged to them.

The main items of commercial crops are rubber, copra, tea, tobacco, palm oil and sugar, all of which were introduced from abroad and were cultivated and promoted by the estate farms and by the Netherlands-India Government during the period under the colonial rule. The importance of the commercial crops have changed with the lapse of time. The sugar-cane was once the mainstay of the Indonesian economy, but more recently sugar cane was replaced by rubber. In 1955 Indonesia produced over 38 per cent of the world rubber production and the export of rubber accounted for over 60 per cent of the world total rubber exports. On the other hand, though Indonesia is an important rice producing country, it has to import a large amount of rice annually, due to its specialization in the export products of agriculture.

Table 4. Importance of Chief Export Products (%)

	1928	1938	1953	1954
Value of export (in million rprs.)	——	687	9,343	9,759
rubber	17.6(%)	22.6(%)	33.0(%)	30.9(%)
petroleum	9.1	23.8	24.5	26.4
tin	5.6	5.0	9.9	7.2
copra	6.8	5.7	7.8	6.7
tea	6.2	8.3	2.9	4.6
tobacco	6.1	3.9	2.9	3.8
palm oil	——	2.8	4.1	3.6
sugar	23.3	6.5	1.2	2.6
others	24.8	21.4	13.7	14.2

Source: The Bank of Indonesia, Annual Report.

Table 5. Imports according to the Main Goods Classification (in million rupiahs)

	1954	1955
staple food	698.2	382.1
other food stuffs	221.8	177.2
textile goods	841.2	588.8
other consumer goods	884.1	928.5
total consumer goods	2,645.3	2,076.6
cotton yarn and cloth	643.5	678.1
iron and steel	311.7	331.7
fertilizers	79.7	116.0
other raw materials	1,411.6	1,800.3
total raw materials	2,446.5	2,926.1
automobiles	152.5	182.5
other machines	258.6	222.8
other capital goods	1,014.0	873.9
total capital goods	1,425.1	1,279.2
grand total	7,171.7	6,887.7

Source: The Bank of Indonesia, Annual Report.

(4) Foreign Trade

The monocultural feature of Indonesian economy is reflected clearly in its exports and imports. The main items of exports are agricultural products, such as rubber, sugar, tea, tobacco, palm oil and mineral products such as petroleum and tin, while imports consist of various industrial products and foodstuffs. All items of Indonesian exports have a strong tendency to fluctuate with the changes in the world markets, and accordingly during the depression period terms of trade become worse. Moreover, though there was a gradual development of domestic industries which enabled the country to cope with the domestic demands to a certain extent regarding the light industrial products, almost all consumer goods have to depend on imports, and moreover imports of capital goods are needed for the development of domestic industries.

Table 6. Balance of Payments (in million of U. S. dollars)

	1951	1952	1953	1954	1955	1956	1957
A. Goods, Services and Private Donations (excluding transactions of foreign owned oil companies)							
Exports f. o. b.	1,102	738	669	609	687	648	603
Imports c. i. f.	−880	−922	−637	−553	−506	−760	−644
Trade balance	222	−184	35	56	181	−112	−41
Services and private donations	−136	−115	−167	−125	−123	−104	−96
Total	86	−299	−135	−69	58	−216	−137
B. Private Capital (excluding transactions of foreign owned oil companies)	−8	−19	13	−5	−1	−1	—
C. Total (A+B)	78	−318	−122	−74	57	−217	−137
D. Transactions of Foreign-owned Oil Companies	44	42	13	39	42	55	59
E. Net Errors and Omissions	−14	−37	−6	—	—	−2	3
F. Total (C through E)	108	−313	−115	−35	99	−164	−75
G. Official Donations and Long-term Capital	40	26	−2	3	−10	38	46
H. Monetary Movements	−148	287	117	32	−89	126	29

Source: I. M. F. Balance of Payments Yearbook.

(5) Balance of Payments

The balance of payments of Indonesia showed an unfavorable balance due to the large amount of invisible trade, though a fair balance of trade was kept up. The deficit in the invisible trade was due to debit on freight and insurance, payment against returns on foreign investments. An additional factor in the unfavorable balance of payments is the fact that the Government has no control over foreign exchange pertaining to the petroleum companies under the American, British and Dutch control. Thus it will be seen that foreign capital has exerted a very powerful influence in all economic sectors of Indonesia, and it has exerted a baleful effect upon the balance of payments.

3. Social Structure-Plural Society

When Indonesia was a colony of the Netherlands, Indonesians, Europeans and Chinese, each constituted a closed and exclusive society which differed from each other and had no contact with each other. The contacts among the different races in Indonesia were seen only in the economic sphere. The Dutch and other Europeans dominated the political organizations and controlled the main economic fields including the estate farms and mining, while the Chinese wielded a powerful influence over the domestic distribution of commodities. Most Indonesians were engaged in agriculture as small and indigent farmers or as laborers on the estate farms, while there were few domestic industries or other economic fields which could absorb the labor force of the country. Employment in the colonial government offices and in State enterprises were severely restricted for Indonesians, who could find employment only in meager classes of work. For example, in 1940 there were only 240 Indonesian students who graduated from high schools and only 37 from the colleges. In the same year out of over 3,000 higher ranks of civil servants there were only 221 Indonesians, and even in those of the middle rank a large number of posts were held by Europeans and Eurasians.(2) As will be seen clearly from the above, it was extremely difficult for Indonesians to take comparatively responsible posts in the civil services and in the business world generally during the colonial period. And it was the result of their indigent economic and social status rather than the consequence of their low levels of education.

(2) G. C. Allen and A. G. Donnithorne, Western Enterprise in Indonesia and Malaya, 1957, p. 283.

Of course, there was a prevalence of illiteracy in Indonesia as was commonly the case among most of the countries under colonial rule. According to the Census of 1930, 93.7 per cent of Indonesisans were illiterate. The high percentage of illiteracy was, of course, due to the difficulties of obtaining education because of their subordinate status with a low and indigent standard of living. But one should not lose sight of another socio-economic factor, namely, Indonesians had but few opportunities for gainful occupations and had few opportunities for improving their lot in the closed and exclusive society even if they had received an education, for the educational system for the Indonesians was prepared and mapped out by their rulers during the colonial period.

After the establishment of schools for the indigenous population in 1845 as the first step in the educational development of the indigenous population, though many changes were effected in the educational system, finally in 1914 primary schools were established in which Indonesian children could learn with the same qualifications as the children of the Dutch and other Europeans. As a consequence, after 1919 the way was opened for Indonesian children to pass courses in the higher primary schools, the middle schools, and colleges and universities. Vocational schools were established with the aim of giving vocational training to the European children resident in Indonesia, of which the Queen Wilhelmina School (a technical school) and the Prince Henry School (a school for commercial and shipping business) were the most famous. Entrance to these vocational schools was not closed to Indonesians.(3)

4. Educational System and Vocational Education Since Independence

As was already mentioned, even after World War II Indonesian economy maintained the colonial economic structures which had been built up under the Dutch colonial rule for centuries. These economic structures brought about the instability of Indonesian economy and a low and indigent status in the national income. To overcome these difficulties the Indonesian Government framed a five year program for economic development in 1956 in order to reconstruct the economic structures, in which agriculture had predominant weight, and in order to promote industrialization of the country. However, in the implementation of the program Indonesia had to face in

(3) cf. J. S. Furnivall, Netherlands India, A Study of Plural Economy, 1939 pp. 364-378.

the first place the difficulty of finding properly trained personnel in the respective economic and administrative fields, so that the lack of men of ability able to lead the nation was most keenly felt although able leaders were urgently required for the development of the country in the economic and political fields, and, secondly, there was a lack of many engineers and technicians who were required to carry out the five year program. Such lack of men of proper training and ability, was the result of the low standard of education among the people at large. Accordingly, for the purpose of carrying out the economic development program the government had to raise the educational level of the people generally, to stamp out illiteracy, and to proceed with the vocational education speedily so as to foster the training of engineers and technicians who were indispensable for the industrialization of a country.

(1) General Education System

The spread of primary education became a very important problem so as to sweep out the illiteracy estimated to be 64.5 per cent of the population in 1954. Article 44 of the constitution prescribes the speedy abolition of illiteracy and speedy introduction of compulsory primary education.

In 1950, a ten year program for the enforcement of compulsory education and a ten year program to wipe out illiteracy were introduced in order to raise the standard of the national education. As for the primary education, children ranging in age from 6 to 12 years are to be given rudimentary education with no charge at the national primary schools. Though the policy aims at giving primary education compulsorily for all children in the various areas, at present there exists a considerable shortage both of teachers and of facilities. Accordingly, the school attendance for children is not compulsory for the time being. It seems possible that compulsory education can be enforced by 1961 as a result of the increase in the number of teachers who are now undergoing training.(4)

For the first two years of the primary education, as the medium of education the provincial native languages are used, but afterwards the Indonesian langauge which has been introduced is now being used. The curriculum includes mathematics, physical exercises, music, handicraft, sanitation, and from the third and fourth school year, geography and history have been newly introduced. In company with primary education adult education has been enforced in an overall program to wipe out illiteracy.

(4) UNESCO, Compulsory Education in South Asia and the Pacific, 1952 p. 81.

Though much progress has already been seen, much more time will be required to achieve the results anticipated.

The middle school course is divided into the lower and the upper courses, each comprising a three-year course. Upon completion of the lower-course pupils of the middle school have to apply for the national examination so as to enable them to meet the necessary qualifications for their further education. At the end of the upper secondary school course students

Table 7. Summary of School Statistics

Level of education and type of school	Institutions	Teachers	Students
Pre-school			
Kindergartens, private	306	506	24,189
Primary			
Government primary schools	24,775	83,060	4,977,304
Private primary schools	1,895	6,765	340,710
Secondary			
General			
Government middle schools	216	2,318	63,597
Government high schools	50	1,003	14,491
Private middle schools	502	4,195	91,029
Private high schools	43	770	9,222
Vocational			
Government lower schools	298	2,498	40,325
Government higher schools	47	523	6,400
Private lower schools	94	547	8,733
Private higher schools	31	433	3,392
Teachers training			
Government teacher-training schools	442	1,441	41,606
Private teacher-training schools	10	115	1,011
Higher			
Government academies	4	71	430
Private academies	2	21	260
Government universities	2	485	4,937
Private universities	2	33	650

Source: Kementerian Pendidikan Pengadjaran dan Kebudajaan.
UNESCO, World Survey of Education, 1955.

are required to take the national examination which qualifies them as adequate applicants for entrance into colleges and other special educational institutions. The first three years in the middle school are divided into the social and cultural section and the natural science section, while the second three years of secondary school education are divided into three sections, viz., literature, sciences and economics. Middle school pupils have to pay tuition. There is, however, an extensive scholarship system in accordance with the necesities and abilities of pupils. And this scholarship system has the character of a contract by which students are expected to work in government offices for certain periods after their graduation.

The period of attendance in colleges and other special institutions is from 4 to 7 years. At present there are two national universities, 5 private colleges and 4 special technical colleges in Indonesia. The faculties of the national universities include literature, medicine, technology, philosophy, agriculture, forestry, veterinary science, mathematics and natural sciences, law, sociology, political science, and economics. Special technical colleges offer courses in commerce, fine arts, and journalism. The language used at present in the higher educational institutions is Indonesian, however, in the lectures given by foreign professors English is used. The requirements for admission into colleges and special technical colleges are the completion of the higher secondary course, and in addition, those who have completed the vocational school course with satisfactory grades are allowed entrance to colleges. In higher educational institutions there is also an extensive scholarship system.

(2) Vocational Education[5]

The principal administrational work of vocational education is in the hands of the Department of Vocational Education under the Ministry of Education (established in March, 1957), though other ministries such as the Ministry of Agriculture, and the Ministry of Labor and Industry participate in vocational education.

The fields in which the Ministry of Education enforces vocational education are technical training, training for women (home-making), training for business, training for social workers, training for law officers and public administrators and teachers' training course for vocational education. The curriculum of vocational education, includes professional subjects comprising

(5) The description given in this section is based on the following pumphlet. X. S. Ondang, Vocational Education in Indonesia, 1957.

60 per cent of it and related subjects providing theoretical knowledge on the professional subjects as well as on general subjects. Schools of vocational education have the characteristics of providing centers for the promotion and training of necessary personnel, and its main features are training of teachers, while the school facilities and factories form the basis of vocational education. A brief account of the contents of main vocational schools will be given hereunder. Education for women will be omitted, for its main purpose is to furnish information on homemaking, a subject which has but little bearing on the main subject dealt with here.

(A) Technical Education

Technical education aims at preparing skilled technicians at the various levels (lower, intermediate and higher) who will be employed in the various industries which are most essential for the industrialization of Indonesia.

i) S.K.—School for workers in cottage industries

Training for a one or two-year period is required after the completion of primary school education. The course of training covers 20 field sincluding woodcraft, masonry, blacksmithing, motor-repairing, carpentry, leather work, shoe-making, sheet-metal work, dye-work, tailoring, weaving, ceramics, etc. The establishment of these training courses depends upon the local conditions and local needs. Approximately 80 per cent of the curriculum is devoted to practical training. There are 204 schools of this kind in the country.

ii) S.T.—Junior Technical Schools

The purpose of these schools is to provide the pupils with adequate knowledge and skill which are demanded in various industries. Entrance qualification requirements are: (1) completion of the primary school course and, (2) satisfactorily passing of the entrance examination. The period of education is for 3 years, and the training courses cover the following subjects, construction engineering, engineering, motor-mechanics, electrical engineering, mining, cabinet-making, woodcrafts, land surveying, weaving, ceramics, wireless, shipbuilding, printing, and diesel motors. 50 per cent of the total period is devoted to practical training. There are 191 of these schools in the country.

iii) S.T.M.—Senior Technical School

The chief purpose of this type of school is to train technicians for the management of certain sections of factories and workshops. Entrance qualifications are the completion of the lower middle school course, and the period of education is 3 years. The courses offered comprise construction engineering, mechanical engineering, civil engineering, electrical engineering,

motor-mechanics, mining, aviation, wireless, shipbuilding, marine engineering, chemistry and others. The related subjects comprise applied sciences, mathematics and chemistry. There are 18 of these schools in the country.

iv) Teachers Training Institutions for Technical Education

There are various kinds of teacher training schools. With the aim of giving adequate qualification to non-qualified teachers S.G.P.T. provides a three-year course after completion of junior technical school. To train teachers for senior technical schools there is a three-year course after completion of senior technical school. There are also other institutions where the education of higher grade mechanics are undertaken.

(B) Business Education

i) K.D.P.—Primary business course

This course aims at teaching and training economic and business affairs to adults. The courses are opened to those who have finished their primary education. The training period is 3 years. There are 19 of these schools in the country.

ii) S.M.E.P.—Junior Commercial Schools

The aim of these schools is to give both the necessary knowledge and training to those who desire to start a business of their own and to those who desire to continue their studies at higher levels. The qualification for admission is passing of the entrance examination for the middle school. There are 116 of this type of school in the country.

iii) S.M.E.A.—Senior Commercial Schools

The senior commercial school provides a three year course after graduation from the lower course of the middle school or the junior commercial school. The aim of the school is to provide a more elaborate business training and to bring the students into contact with the details of foreign trade. Most graduates of this type of school find employment in private firms or in government offices, while some set up businesses of their own. There are 26 of these schools in the country.

(C) S.P.K.—School for Social Workers

This type of school provides a 4-year training course for social workers in various fields including community development, industrial social work, social assistance and medical social work. Training in practical work comprises an important part of the curriculum throughout the course. The graduates of the school usually find employment in several branches of various ministries. Entrance requirements for admission to the school is graduation from the lower middle school. There are 3 of these schools in the country.

(D) S.M.K.A.—School for Law Officers

Three years of practical training is given at one of the district courts to those who have finished the lower middle school course. Originally the course was planned for officers in service for advanced training. There are 3 of these schools in the country.

(E) K.P.A.—School for Civil Administration

This school provides a three-year course in-service-training in public administration for those who have had primary school education. There are 18 of these schools in the country.

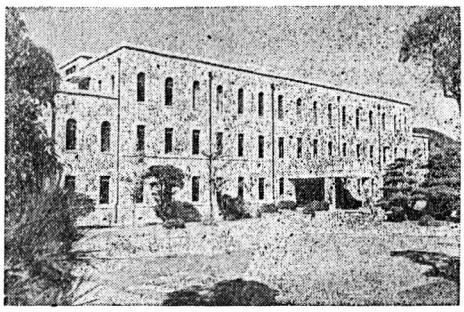
(F) Educational Facilities for other Professions

Institutions of vocational education which are under the control of ministries other than the Ministry of Education, include a school for agriculture, a school for veterinary science, a training center for handicraft and mechanics, a school for textiles, an academy of technology, a school for aviation, and a mercantile marine academy.

The number of vocational schools including various teachers-training schools numbering 859, which is equal to 44 per cent of the total number of middle schools and higher educational institutions. A glance at these figures shows clearly that in Indonesia vocational education is regarded as an essential part of education and for the social progress of the community.

Though great expectations have been placed on the future of vocational education, there are considerable difficulties in the administration of vocational education due to the lack of teachers and facilities and due also to the absence of an apropriate policy which has created an uncertain political situation and unsound financial conditions. Regarding the present vocational education system, it seems to have a weakness as regards the relation of primary and ordinary middle school education, even though a two track system is adopted. A remedial measure is therefore under consideration by those concerned in order to cope with the situation.

THE RESEARCH INSTITUTE FOR ECONOMICS AND BUSINESS ADMINISTRATION, KOBE UNIVERSITY.



The Institute was founded in 1919 and attached to Kobe University (the Kobe Higher Commercial School at that time) with an endowment fund from F. Kanematsu & Co., Ltd., the pioneer firm in Japan-Australia trade. This fund provided the school with a building and the means to carry on research work. In 1949, the Institute became an official organization attached to Kobe University, maintained by the national treasury.

The aim of the Institute is to carry on scientific and synthetic study of industrial economy in its two teams of research work, namely, the Research Team of International Economy and the Research Team of Business Administration. The former comprises five sections, each taking charge of research work on International Trade, Marine Economy, International Finance, International Rules and Agreements on Commerce and Regional Study on Latin-America; the latter comprises four sections, each of which undertakes to do research work on Business Administration, Accounting, International Management and Industrial Relations.

Besides these regular research sections, we have horizontal study groups closely related to the regular research sections to carry on special research work by a Committee of Specialists. In the field of international economy, two committees for special study, the Committee on Asian Economy and the Committee on Latin American Economy, have been organized; and in the field of business administration the Committee on Company Accounting has been formed. The said special research work is carried on by the faculty of the Institute and by extra-Institute and extra-University research workers.

The results of the research work are published in the Kobe Economic & Business Review, the Kobe University International Economic Review and the Kobe University Business Review (each published annually) and in the monthly journal "Kokumin Keizai Zasshi" (Journal of Economics and Business Administration), and sometimes in book from on specific themes.

The Institute has a research staff of 24 members and a secretariate of 12 clerks.

THE RESEARCH INSTITUTE FOR
ECONOMICS & BUSINESS ADMINISTRATION
KOBE UNIVERSITY

Director: Susumu WATANABE
Secretary: Toshio HARA

GROUP OF INTERNATIONAL ECONOMIC RESEARCH

Ginjiro SHIBATA	Professor of International Trade and Marine Economics *Dr. of Economics*
Fukuo KAWATA	Professor of International Trade
Hiroshi SHINJO	Professor of International Finance Dr. of Economics
Torasaburo NOMURA	Professor of Transportation
Taro KAWAKAMI	Professor of Private International Law
Jiro YAO	Professor of International Finance
Tei-ichi YAMASAKI	Assistant Professor of Regional Study on Latin America
Seiji SASAKI	Assistant Professor of Marine Economics
Masahiro FUJITA	Assistant Professor of Regional Study on Latin America
Hikoji KATANO	Assistant Professor of International Trade
Hiromasa YAMAMOTO	Assistant in Marine Economics Section
Yoshiaki NISHIMUKAI	Assistant in Regional Study on Latin America Section
Jyun NAKAJIMA	Assistant in International Trade Section
Yoshiro IKUSHIMA	Assistant in Regional Study on Latin America Section

GROUP OF BUSINESS ADMINISTRATION RESEARCH

Susumu WATANABE	Professor of Accounting Dr. of Business Administration
Minoru BEIKA	Professor of Plant Location Dr. of Business Administration
Yoshimoto KOBAYASHI	Professor of Business Management Dr. of Business Administration
Tadakatsu INOUE	Assistant Professor of Business History
Nobuko NOSÉ	Assistant Professor of Social Accounting
Jiro ONO	Assistant in Business Administration Section
Tetsuo KOBAYASHI	Assistant in Accounting Section
Kihachiro TSUDO	Engineer in Business Machinery Section
Tomoko KUSAKABE	Assistant in Business Machinery Section

Office: The Kanematsu Memorial Hall,
THE KOBE UNIVERSITY
ROKKO, KOBE, JAPAN