HONG KONG

PROGRAMMES OF TECHNICAL EDUCATION

Education in Hong Kong was initially the result of voluntary and philanthrophic efforts. In this initial period two prominent influences had a bearing on the social, economic and educational uplift of this British Colony, the first being traditionally British and the second being traditionally Chinese. Chinese influence is strong because the colony is very close to the Chinese mainland. But the education system has been greatly influenced by the British system, with its pyramidal structure and educational ladders, except for minor changes to suit local conditions.

The Government currently maintains one technical institute and nine secondary technical schools, of which five are for boys, one is for girls, and three are co-educational. The Salesian Society runs two secondary technical schools, one for boys and one for girls. The 18 secondary technical schools offer a five-year course which leads to Hong Kong Certificate of Education examinations. The course has a technical bias and provides a number of practical subjects such as wood-work, needle-work, metal-work, technical drawing and commercial subjects. Five aided modern schools offer three-year courses which have a strong technical bias.

There are also quite a few vocational schools which are run by private bodies and charitable societies. All are aided institutions; four have been converted into pre-vocational schools and are being financially assisted by the Education Department. The vocational institutions provide courses of varying standard. The pre-vocational schools provide courses of three years' duration after primary standard. The course curriculum comprises general education to the extent of 50% of its total content, and the remaining 50% provides a broad-based technical education in three main industrial fields.

The pre-vocational schools offer courses which do not essentially provide complete skills or knowledge of a particular occupation or a trade, but do provide skills which enable the student to choose a definite career/occupation. In any case, the products of these schools are prepared for apprenticeship in industries. The pre-vocational schools provide facilities for 1,000 students. After completing their studies in pre-vocational schools, the students have the option of undergoing higher studies in the Morrison Hill Technical Institute.

Technical institutes provide educational and training facilities for apprentices and workers in part-time classes which are held in the day and the evening. It is proposed to start two new institutes in 1975.

Morrison Hill Technical Institute runs craft and lower level technician courses, some of which were previously conducted in the Technical College, now part of the Hong Kong Polytechnic. This, the only polytechnic in Hong Kong, came into being in 1972. It has an initial capacity of 1,800 full-time students and a planned capacity of 8,000 in 1978.

TECHNICIAN TRAINING PROGRAMME

As stated above, technician-level courses are run in the Hong Kong Polytechnic. The Polytechnic had the Hong Kong Technical College as its initial base.

It has at present eight departments. These are Building, Surveying and Structural Engineering, Mechanical and Marine Engineering, Electrical Engineering, Accountancy and Management Studies, Textile Industries, Nautical Studies, Industrial and Commercial Design, and Mathematics and Science. The Department of Maths and Science is a core Department. The Polytechnic provides full-time courses leading to Polytechnic Higher Diplomas and the examinations of many British professional institutions.

This Polytechnic was set up by an Ordinance and is run by a duly constituted Board of Governors. The procedure of financing and administering the Polytechnic is the same as that for the two universities and all are funded through the Universities and Polytechnic Grants Committee. The Polytechnic Board has been vested with all powers necessary for the institution of particular courses and the organization and administration of the Polytechnic.

Admission to the technician courses run in the Polytechnic is granted to those holding the Hong Kong Certificate of Education with a minimum grade of E in particular subjects.

The Polytechnic runs full-time and part-time courses leading to its own Higher Diploma and Ordinary Diploma, also to various examinations organized by professional and examining bodies, mainly the City and Guilds of London Institute. It also covers a variety of qualifications in multiple subject groups in the fields of technology and commerce.

The Polytechnic was started in the former Hong Kong Technical College which already had excellent instructional facilities in the form of equipment, laboratories, workshops and well-trained staff. It is worth noting here that in its workshop and laboratories the Polytechnic has modern equipment and machinery which can produce sophisticated articles and instruments. Perhaps, in view of the existence of these excellent facilities, it may not always be necessary for a technician trained in the Hong Kong Polytechnic to need further in-plant training.

Evening courses form a major part of the Polytechnic's responsibility. It plans to admit in evening courses 20,000 students by 1978, an increase of almost 100% over a period of five years. It plans also to provide facilities for those in employment to acquire through part-time classes the same qualifications as the full-time students.

The students who achieve good results in their Higher Diploma are permitted to stay for one more year with a view to pursuing full-time professional courses leading to professional qualifications (known as CEI Part II) in Structural, Electrical, Electronics, Mechanical and Production Engineering, Building and Surveying, Textile Technology and Textile Chemistry. The Board of Governors has approved the award of a qualification known as the Associateship of the Hong Kong Polytechnic.

Academic developments in the Polytechnic have been excellent. Programmed instruction has been introduced with success. Technical teachers have been sent abroad for advanced pedagogical training. The methods of instruction in the classroom are modern and thought-provoking. Industrial visits are organized for the benefit of laboratory technicians and trainee cadets with a view to relating theory with practice. Intensified project work has been introduced for Higher Diploma students.

Hong Kong

The Polytechnic runs its own employment service. The employment prospects are on the whole very bright, and generally the demand exceeds supply. The student-counselling service will have to be developed to suit future needs.

In Hong Kong there are a number of modern and specialized industries. In spite of this, the facilities for in-plant training are almost non-existent, and this is why many students have been sent overseas for apprenticeship training in appropriate industries. The duration of such apprenticeships is two years. The idea behind this activity is to increase the student's knowledge of the actual work situations in different industries, and also to learn the methods of practical applications.

DEGREE-LEVEL ENGINEERING EDUCATION

There are two universities in Hong Kong. One is the University of Hong Kong and the other is the Chinese University of Hong Kong. Engineering degree courses are, however, run only by the University of Hong Kong, under the faculty of Science and Engineering. The faculty offers facilities for the following courses: Civil Engineering; Mechanical and Industrial Engineering; Electrical Engineering; and Architecture. The duration of the degree courses is three years. Degrees are divided into four Divisions. The standard attained in each of the three parts of the final examination is taken into account.

The University of Hong Kong's Faculty of Engineering comprises four Departments of Engineering and a Department of Architecture. The University turned out 134 engineers in 1973. It proposes to provide elements of marine engineering in the curriculum of mechanical engineering. It also plans to diversify the existing curriculum of graduate courses to introduce structural engineering and electronics engineering. For this purpose, intake would be increased.

Practical experience and field work form an essential part of the syllabus. The students are required to undertake field work on industrial training at the end of each year of examination during the summer vacations.

The Morrison Hill Technical Institute (Technician and Craftsman Courses)

This Institute's responsibility is to provide students with the basic knowledge necessary for their future personal and vocational "growth". Its courses are planned to expound fundamental concepts and to guide students in their application, as well as to prepare them for technical positions in industry and commerce and acquaint them with social and cultural developments. Guidance in vocation, and assistance in finding work of the right kind, is part of the Institute's structure.

Through its part-time courses the Institute offers opportunities for technical education to mature men and women. Through its short courses it serves local industry by providing up-grading and up-dating training as well as increasing knowledge and understanding in a wide variety of subjects.

The Institute is a technical institution aware of its social and economic roles, and attaches due importance to the education, training, and welfare of the individual student.

The Technical Institute occupies an important position in the local education system. Its main function is to provide a wide range of facilities for the training of craftsmen and technicians. It provides courses which are fully vocational. It does not duplicate the function of the secondary technical schools, which is to provide a full-time secondary education with a technical bias: nor is it similar to pre-vocational or secondary modern schools which provide courses with a high general education content.

The importance of integrating education with basic practical training is fully appreciated. For this reason all full-time courses are designed to fully integrate practical training with related theory.

The Institute provides systematic training in technical and commercial subjects and is administered through six different departments, each under the charge of a head. These departments are: Commercial Studies, Construction, Electrical Engineering, Mechanical Engineering, Preliminary and General Studies, and Printing.

The Technical Institute provides the following main types of course:

(a) Post-Secondary Level Courses

(i) Full-time, part-time day-release, part-time evening and short courses, at technician level.

(ii) Full-time, part-time evening and short courses in commercial subjects.

(iii) Full-time, part-time day-release, part-time evening and short courses for the training of technical teachers and workshop instructors employed in technical institutions or in industry.

(b) Craft Courses

Full-time, block-release, part-time day-release, part-time evening and short courses.

APPRENTICESHIPS AND THE MORRISON HILL TECHNICAL INSTITUTE

The Morrison Hill Technical Institute works closely with the Apprenticeship Training Unit of the Labour Department, so that apprentices in recognized apprenticeship schemes may be able to obtain complementary institutional training.

Modern and well-organized apprenticeship schemes incorporate both planned on-the-job training and related institutional training, as provided at the Institute. The aim is to ensure close co-operation between employers, the Technical Institute and the Apprenticeship Training Unit of the Labour Department. It is expected that the firms which have agreed to co-operate will supply the bulk of the industrial experience required. Properly planned on-the-job experience, on a sound job-rotation basis, is most important for any apprentice or trainee. There is no doubt too that part-time day-release courses are the lynch-pin of good apprenticeship training.

The one-year full-time craft courses at the Morrison Hill Technical Institute provide theoretical and basic practical training equivalent to the first year of an on-the-job apprenticeship. It has been recommended by the Industrial Training Advisory Committee that on the satisfactory completion of such a course a student should enter directly into the second year of an apprenticeship. A number of firms have already followed this recommendation.

Much more needs to be done by industry in Hong Kong to increase the number of apprenticeship opportunities if an adequate and constant supply of highly-skilled craftsmen is to be assured. This is a pre-requisite if industry is to continue to expand and venture into the realms of more sophisticated products.

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Sponsored Students

This is an excellent scheme of involvement of industry in the education and training system. Sponsored students are those already employed in an industrial organization who are released for attendance on a full-time, a block-release, or a part-time day-release course. The sponsoring firm pays the institute's fees for the students concerned. For full-time and block-release courses a firm may also, in some cases, pay the students a nominal wage. On completion of such a course, the student will return to his employer.

A number of one-year, full-time craft courses are organized, and firms are encouraged to employ apprentices and sponsor them on such courses. A list of industries appears on page 28. In addition to the sponsoring of full-time students, firms in Hong Kong and the Government pay or refund the fees of their employees who successfully complete part-time day-release or part-time evening courses.

Planning of Courses

The Technical Institute maintains close contact with industry and commerce. A number of members of staff are serving on the various committees of the Industrial Training Advisory Committee. Courses are planned by the Institute in close co-operation with various industrial organizations so that an integrated form of academic and industrial training is provided.

Satisfactory completion of the Preliminary Certificate Course, run by the Morrison Hill Technical Institute, is considered to be equivalent to the completion of Form III in related subjects, and applicants are therefore eligible for entry to most craft-level courses.

Satisfactory completion of the General Certificate Course, Year One, run by the Morrison Hill Technical Institute, is considered to be equivalent to completion of Form IV in related subjects, and permits students to enter directly into Year One of the Technician Evening Courses.

Satisfactory completion of the General Certificate Course, Year Two, run by the Morrison Hill Technical Institute, is considered to be equivalent to completion of Form V in related subjects: students may then apply to enter the Ordinary Certificate evening courses at the Polytechnic.

MANPOWER PLANNING

The first series of surveys on the manpower requirements of Hong Kong's ten major industries conducted between 1966 and 1969 indicated a requirement of 2,600 technicians annually. The second series of surveys has already been initiated. Its report was not available at the time of writing this report.

Industrial undertakings are themselves aware of proper planning. They are deeply involved in the process of course planning and industrial training. When they require technically trained manpower they recruit appropriate personnel and sponsor them for training in the Polytechnic or the Morrison Hill Technical Institute.

Manpower requirements of the major industries are periodically assessed. Forecasts of further requirements are based on mean growth factor obtained from a number of sources (existing workforce, wastage rates etc.).

The Government is well aware of the need and importance of manpower planning. From time to time it conducts surveys of the major industries in Hong Kong with a view to ascertaining what skill and technology are required

and what training is needed to maintain the supply of such skill. These activities are carried out under the auspices of the Hong Kong Training Council which will then outline the manpower requirements at various levels and make recommendations to the Government on policy on manpower planning and training. The Hong Kong Training Council will also recommend training programmes designed to meet the job standards, both for trainees and for trained officers who need retraining.

PRACTICAL TRAINING - THE ROLE OF INDUSTRY

Practical training is required by industrial employers and, in the case of technologists, by the professional institutions in the United Kingdom. In October 1973 the Governor appointed the Hong Kong Training Council to advise him on measures to ensure a comprehensive system of training geared to meet the developing needs of Hong Kong's economy. Ten industry training boards have since been set up under the umbrella of the Training Council to deal with the training problems of major industries. Five other committees have been appointed to deal with matters common to more than one industry, such as apprenticeship, instructor training, technical training in institutions, translation and vocational training. The training boards have taken over the work done by the former industrial committees (under the former industrial training advisory committee) and continue their work on drawing up minimum job standards and job specifications in various major industries. Among other purposes these standards and specifications aim at introducing a generally accepted skill level for principal jobs in the trades, and providing guidelines for courses at technical institutions or vocational training centres, run by the Government, private bodies or voluntary agencies.

The Industrial Training Division of the Labour Department is responsible for:

(a) Servicing the Hong Kong Training Council which has the responsibility for manpower planning and training in Hong Kong;

(b) encouraging and assisting employers to start organized training schemes; and

(c) enforcing the Apprenticeship Ordinance when enacted.

There is no legislation in Hong Kong pertaining to industrial training. Consideration is being given to the enactment of the Apprenticeship Bill to regulate apprenticeship in designated trades or occupations and to make provisions for matters connected therewith.

In 1974 the Government appointed two provisional industry training authorities to pave the way for the eventual establishment of statutory training authorities to administer two contributory training schemes in the construction and clothing industries. These statutory bodies, when established, would be empowered by law to impose a levy on employers for the purpose of setting up and maintaining training centres.

RELATIONSHIP BETWEEN EDUCATION AND TRAINING

There is a very close relationship between industries and technical education in that the technical educational institutions are constantly reviewing their curricula and syllabuses to cater for the needs of industries, which are rapidly changing and advancing and becoming more sophisticated. At the same time, industries are taking on undergraduates from these institutions during the summer vacation to enable them to experience the industrial environment and make use of the training

facilities. In return for this, the institutions of higher education are also providing a service to industries through consultancy and research by their staff.

Measures that assist integration between industry and technical education (besides sandwich, day-release and block-release courses) include the following:

(a) The universities offer a wide variety of courses both in vocational and professional training at their departments of extra-mural studies. These courses are normally run on a part-time evening basis.

The Polytechnic and the Morrison Hill Technical Institute both offer part-time day-release and part-time evening courses comprising a wide and comprehensive range of subjects. Most of the part-time day-release students are either recommended or sponsored by their employers. In addition, some block-release courses are being offered at the Technical Institute, and some are being organized by the Polytechnic. The students of these block-release courses are entirely sponsored by their employers.

(b) Although there is no direct representation of industry in their administration, the technical institutes design and offer courses based on the advice and recommendation of the Hong Kong Training Council whose members are mostly industrialists. In the Polytechnic every department has an advisory committee comprising members from the commercial and industrial sectors. The role of such committees is to act as an interface between the Polytechnic and industries in the community. These committees advise, and from time to time review the course structure and equipment with a view to gearing such resources to fulfil local needs.

Advisory Panels, somewhat similar to the advisory committees of the Polytechnic, exist in the departments of extra-mural studies of the universities.

(c) Institutional training at the universities, the Polytechnic and the technical institutes is provided by means of workshops and laboratories. These are equipped with up-to-date machines, many of which are capable of very advanced work. Most of the equipment in the technical institutes and the Polytechnic is of an industrial type so that students of industry may be taught the operational and theoretical aspects of manufacture. The Polytechnic is considering setting up an industrial training centre to meet the needs of Hong Kong for professional practical training in engineering and technology. Similar facilities are offered by Loughborough University in the U.K.

(d) The training of technical teachers is undertaken by the newly-established Hong Kong Technical Teachers' College. This well-equipped college provides a wide and comprehensive range of training facilities for trainee-teachers in engineering, commerce and other industrial disciplines. The college is also setting up a resource centre to provide teachers and instructors with a wide range of teaching methods and teaching aids. New teaching and training methods are being developed to improve teaching proficiency.

The College is also offering re-training for in-service teachers and instructors on a part-time day-release or evening basis, sponsored by their employers.

(e) The pattern of training follows the training programmes recommended by the Industrial Training Boards of the Hong Kong Training Council. These programmes are designed to meet specific job standards and are carried out jointly by industries and the Technical Education Branch of the Education Department (e.g. placement at Technical Institutes and Technical Teachers' College). Where facilities and other related studies are considered locally inadequate the Government will undertake to send scholars overseas to acquire appropriate training and skill. The public and private sectors organize similar training schemes for their own staff, though on a smaller scale than the Government.

EXAMINATIONS AND AWARDS

Examinations are normally carried out internally. However, prior to the examination, the questions are sent to external examiners who assess their standard and content. Later, when the scripts have been marked by the lecturers concerned, these too are sent to the external examiners for further assessment and evaluation. The final process of certification and awards is administered by the academic committee. The purpose of assessment by external examiners is to ensure that standards are in accordance with those required for recognition by external academic and professional institutions.

TRAINING ESTABLISHMENTS RUN BY IMPORTANT INDUSTRIES

The purpose of this survey would not be properly served if mention were not made of the training centres run by various industries in Hong Kong. One of the best training establishments I have ever seen is that run by the Hong Kong Air Craft Engineering Co. Ltd., a company that undertakes major work for airlines and defence forces throughout the world. In outline, its main functions are:

(a) Line manufacture of transiting aircraft belonging to scheduled airlines;

(b) specialist jobs of air-frame overhaul, major modification and repair;

(c) engine and component overhaul and servicing of major equipment such as propellers, hydraulic equipment and avionics; and

(d) total main base engineering for Cathay Pacific Airways.

Because of the rapid expansion of aviation, there is dearth of aircraft engineers, skilled aircraft fitters, technicians and mechanics in Hong Kong. The H.A.E.C. therefore set up several years ago its own training department which ensures a regular flow of properly-trained and ready-made manpower for its workshops and hangars.

The various types of training given by the H.A.E.C. are:

(a) Apprentice Scheme Suitably qualified school leavers are admitted each year. They are prepared for senior positions in the company.

(b) Mechanic Training Periodically the company recruits technical-school and high-school leavers and trains them as mechanics. Exceptionally well-qualified trainees are nominated for advanced training which enables them to occupy promotional jobs.

(c) Type Training Programme Because new types of aircraft and accessories are being introduced every day, qualified staff are sent overseas to manufacturers and airlines if they cannot be trained further by the company's own experienced staff.

(d) Approved Courses Courses are held continuously to cover various types of aircraft visiting Hong Kong.

(e) Refresher Courses This is a re-training programme run continuously for the Company's own staff to enable them to learn new and modern skills and techniques.

(f) Licence Training Full training is given by specialist instructors to staff opting to obtain or extend their aircraft type licences.

The school is one of the biggest establishments in the South Asia region, and perhaps the only one of its kind.

In Hong Kong half of the population is employed in industry, which is export-oriented and generally sophisticated. The technical education system takes care of the requirements of industry, but the latter does not appear to feel satisfied that courses are so designed as to provide alternative openings and ease of transfer from one stream of industry to another.

The Federation of Industries in Hong Kong is aware of the present requirements of member industries and the general nature and type of future requirements. The Federation has taken the initiative in the matter of specialized training of technicians and engineers. They have instructed six awards for overseas training given in various fields of industry. The Federation also obtains training places abroad, particularly in Japan and West Germany.

The Federation claimed that in 1973 it provided 2,300 apprenticeship seats under the scheme of the Labour Department, mainly in craft training, electronics, textile garments, and the printing and plastics industries. It also arranges engineering craft training in the mechanical, electrical, ship-building and automobile servicing industries.

APPENDIX 1: OFFICIALS MET AND VISITS UNDERTAKEN

Officials

Mr. A. J. Kingwell	Deputy Director of Education, (Technical)
Mr. P. L. Smith	Principal, Technical Teacher Training College
Mr. J. R. Devereux	Principal, Kwun Tong Technical Institute
Mr. Lincoln Lieu	Principal, Morrison Hill Technical Institute
Mr. G. A. V. Ribeiro	Technical Education Officer
Mr. G. A. Larsen	Sr. Education Officer (Technical)
Mr. C. Williams	General Manager, Hong Kong Air Craft Engineering Co
Mr. Stephen Pao	Training Superintendent, Hong Kong Air Craft Engineering Co
Mr. James Wu Manhon	M.L.C. and Proprietor, China Cold Storage Company
Mr. S. O. Chan	Joint Director, Federation of Hong Kong Industry
Mr. J. R. Price	Commissioner for Labour
Mr. H. R. Knight	Assistant Commissioner for Labour (Training)
Dr. S. E. Au	Manpower Development Manager, Hong Kong Productivity Centre
Mr. W. K. Chan	Section Head of Manpower Development Unit, Hong Kong Productivity Centre
Mr. J. Hayes	Training Officer, China Light & Power Co, Ltd
Mr. J. A. Cheetham	Secretary, Employers Federation of Hong Kong
Dr. W. S. Leung	Dean of Engineering and Architecture, University of Hong Kong
Mr. A. J. Linehan	Labour Adviser
Dr. Y. K. Ching	Acting Director, Hong Kong Polytechnic

Some Institutions Visited

Hong Kong Air Craft Engineering Company Ltd; Kwan Tong Vocational Training Centre; Morrison Hill Technical Institute; China Cold Storage and Engineering Company; China Light and Power Co, Ltd.

APPENDIX 2: ESTABLISHMENTS OFFERING ORIENTATION AND TRAINING FACILITIES FOR TECHNICIANS

Ahong Construction Co, (H.K.) Ltd
American Engineering Corporation
Art Key Metal Works Ltd
Au Chow Electrical Co
Candy Novelty Work Ltd
Carter Semiconductor
Chan & Sum Kun Jewellery Co
Cheong Woo Co
Chi Fai Engineering Construction Co
Chiap Hwa Clocks and Watches Ltd
China Cold Storage and Eng. Co, Ltd
China Engineers Ltd
China Light and Power Co, Ltd
Chuag's Cutlery (Holdings) Ltd
Command Secretariat (Civilian Employment and Pay Section)
Cosmopolitan Radio and Elec. Corp
Cox International Ltd
Crown Motors Ltd
Dah Chung Industrial Co, Ltd
Danemann Watch Case Factory Ltd
Dickson Construction Co
R. E. Dietz Co, Ltd
Eton Enterprises Ltd
Far East Motors Ltd
Fook Lee Construction Co, Ltd
Fortuna Food Products Ltd
Fund Tsun Architects
Gammon (H.K.) Ltd
Ge Ling Engineering Co
Gilman & Co, Ltd
Good Years Engineering Co, Ltd
Grandur Electrical Co
Haking Industries (Mechanics & Optics) Ltd
Hanimex (H.K.) Ltd
Henry Engineering & Construction Co, Ltd
Hop Hing (1950) Weaving Factory Ltd
Hong Kong Electric Co, Ltd
Hong Kong L.P. Gas Co, Ltd
Hong Kong Soya Bean Prod. Co, Ltd
Hong Kong Telephone Co, Ltd
Hong Kong United Dockyard Ltd
Honor Industrial Development Co, Ltd
Hsin Chong Construction Co, Ltd
International Engineering Ltd
The Jardine Engineering Corp. Ltd
Jabsen and Co
Jabsen Motors
John Lok & Partners
Karkool Ltd
Lai Lee Machine Factory
Lee Wah Weaving Factory Ltd
Mapco Machined Parts (H.K.) Ltd
Metro-Dodwell Motors Ltd
Oak Electro/netices Corporation (H.K.)
On Hing Cheong Engineering Co
On Lee & Co
Otis Electric Co
Otis Elevator Co
Our Lady of Maryknoll Hospital
Paul Y. Construction Co, Ltd
Perfekta Enterprises Ltd
Pioneer Quarries (H.K.) Ltd
Qualidux Industrial Co, Ltd
Repco Automotive Engineering (H.K.) Ltd
Royal Electrical and Mechanical Engineers
Ryoden Electric Engineering Co, Ltd
Shiu Wing Co, Ltd
Shun Hing Electronic Trading Co, Ltd
Singer Sewing Machine Co
Sonca Industries Ltd

South Sea Textile Mfg. Co, Ltd
Star Industrial Co, Ltd
Sung Foo Kee Ltd
Sunnex Products Ltd
Syvania Far East Ltd
Sze Kee Metal Works
Tat Ming Engineering Works
TMX (H.K.) Ltd
Triangle Motors Ltd
Turin Motors Ltd
United Electrical & Mechanical Co
Variety Plastic Metal Ware Factory
Wallace Harper & Co
A. G. Wilkinson
Wing Yiu Electrical Co
T. S. Wong & Co
World Light Manufactory Ltd
Yau Wing Co, Ltd
Zung Fu Co, Ltd