FEDERATED MALAY STATES

REPORT ON THE TECHNICAL SCHOOL, KUALA LUMPUR

KUALA LUMPUR:
PRINTED AT THE FEDERATED MALAY STATES GOVERNMENT PRESS
1939
FEDERATED MALAY STATES

REPORT ON THE TECHNICAL SCHOOL, KUALA LUMPUR

KUALA LUMPUR:
Printed at the Federated Malay States Government Press
1939
SUMMARY OF THE REPORT.

Paras. 1-2 ... Our terms of reference and the procedure we followed are set out.

Paras. 3-5 ... The functions of Trade and Technical Schools are defined.

Paras. 6-13 ... Study of a number of reports on technical and vocational education, principally in other countries, reveals certain principles which we consider to merit close attention.

Para. 14 ... A brief account of the development of the Kuala Lumpur Technical School is given. It indicates the need for formulating and working to a settled policy in future.

Para. 15 ... Notwithstanding its handicaps the Technical School has been of very great value to Government Departments and has added to the range of remunerative employment available for locally-born youths.

Paras. 16-17 ... To meet the needs of Government Departments alone over the next ten years the school, which it has been decided to build, must provide for not less than 180 students.

Paras. 18-22 ... The capacity of private enterprise to absorb "graduates" from the school is difficult to estimate. But experience elsewhere and in Government Departments in Malaya shows clearly the value of workers of the Technical Assistant grade and we consider that Government should recognise the obligation to provide them for industry as well as for the technical departments by making generous provision for private students in the new school.

Para. 23 ... But the supply of Technical Assistants should not be allowed to outstrip the demand and we therefore recommend the expansion of the school by 50 per cent. to 200-220 pupils as a first step towards an ultimate capacity of 300 pupils.

Paras. 24-26 ... It should be the policy of the departments, when conditions permit, to recruit not as at present from the Secondary Schools but from private pupils at the school who have completed or reached a particular stage in their Courses there. The preference-to-Malays policy can be safeguarded by the provision of scholarships.

Paras. 27-31 ... The qualification for entry to the school should be the School Certificate but Government apprentices should serve a probationary period in their departments before entering the school.

Paras. 32-35 ... The Education Department should consider the provision in the Secondary Schools of post-School-Certificate classes devoted mainly to mathematics and science for candidates for technical employment.

Paras. 36-38 ... The Technical School working week should consist of 33-34 hours of which at least a third should be devoted to practical work.

Paras. 39-40 ... We recommend the trial of a loose-leaf text-book system with the object of reducing the amount of note-making and note-copying and to give students better opportunities for absorbing and digesting the instruction presented to them.

Paras. 41-45 ... The syllabuses of the Engineering Courses are considered to be somewhat too comprehensive and insufficient time is given to practical laboratory and field work.

Para. 46 ... The Mechanical Engineering Course should be lengthened to three years.

Paras. 47-52 ... The Survey Course should also be lengthened to three years and provide an introduction to all types of surveying practised in Malaya.
Paras. 58-61 ... Although there are good prospects of employment for "graduates" from a Radio Engineering Course we make only a qualified recommendation for the provision of such a course since it would, to some extent, be in competition with a similar Course offered by the Singapore Trade School.

Paras. 62-66 ... We do not recommend the provision of Advanced Courses though these may be necessary if promotions to posts now held by Europeans are to be made from the Technical Assistant ranks. Refresher Courses and Evening Classes would be of value and should have the attention of the Standing Advisory Committee.

Paras. 67-77 ... The quality of the teacher is the most important factor in Technical School Education. Part of the staff must be permanent but as large a volume of instruction as possible should be in the hands of practical men seconded from the technical departments with part-time assistance from other officers and qualified professional men not in Government service. We recommend the immediate addition of a qualified Electrical Engineer to the permanent staff. When the enrolment approaches 300 pupils a Mining Engineer should be seconded to the School from the Mines Department, an additional duty post being created if necessary.

The Senior staff would then consist of:
- Permanent - A Civil Engineer; an Electrical Engineer.
- Seconded - A Surveyor; a Mining Engineer.
- Part-Time - Fully qualified professional men for specialist instruction which cannot be given by the permanent and seconded staff.

As the enrolment increases additional Asiatic instructors will be required. Their provision is a matter for the consideration of the Standing Advisory Committee from time to time.

Paras. 78-80 ... In the matter of accommodation we have confined our attention to general principles. Since the buildings must be readily adaptable to the changing requirements of departments and industry they should not be of massive and expensive construction (see also para. 8). The general accommodation and laboratories should be designed and built for 300 students. Residence at the Technical School should, with minor exceptions, be compulsory. The hostel should therefore be designed for 270 students but the immediate building programme need provide for 180-200 only.

Para. 90 ... Financial provision for making good the deficiencies in the existing equipment should be kept separate from that for the buildings and might be spread over three or four years.

Paras. 91-95 ... We recommend that a reconstituted Standing Advisory Committee should be charged with certain definite duties specified in detail.

Para. 96 ... Our recommendations involve not only capital expenditure but also an increase in annually recurrent commitments. We give reasons for suggesting that, in this respect, the requirements of the Technical School should take precedence over any extension of English education.

Paras. 97-104 ... We do not recommend the amalgamation of the Kuala Lumpur Trade and Technical Schools, but do recommend that, in order that an introduction to an efficient workshop atmosphere may be given at the earliest possible stage to Technical School students, they should attend a 2-3 weeks course at the Trade School (in the Trade School vacation) just prior to the commencement of their first term at the Technical School.
REPORT ON THE TECHNICAL SCHOOL, KUALA LUMPUR.

I.—TERMS OF REFERENCE AND PROCEDURE.

1. (a) At the end of June we were appointed a Committee to consider:
   (i) the whole question of (a) the courses to be given,
       (b) the staff required,
       (c) the accommodation to be provided
   in the Technical School, Kuala Lumpur;
   and (ii) the possibility of amalgamating the Trade School and the
   Technical School.
   (b) These comprehensive terms of reference we interpreted as
   requiring us to make recommendations concerning the general policy
   to be followed in connection with the school and also to make suggestions
   as to its future management. We did not interpret them as a direction
   to examine the detailed financial aspects of the decision, already taken,
   to erect a new school since such matters can most profitably be
   considered after decisions have been taken on our policy recommenda-
   tions.

2. We held altogether nineteen meetings and visited both the
   Trade and Technical Schools. Our first action, after consulting the
   relevant Secretariat records of the subject, was to frame a compre­
   hensive questionnaire in response to which we received a great deal
   of valuable information from all the departments which make use of the
   Technical School. We were further assisted by memoranda prepared
   by the Principal of the Technical School, the acting Principal of the
   Trade School, the Electrical Department and, in connection with a
   proposed course in mining engineering, the Chief Inspector and the
   Acting Chief Inspector of Mines. Further we had the benefit of
   discussions with the heads or representatives of all the departments
   interested in the school. We also obtained the views, so far as seemed
   necessary, of unofficials and finally we were fortunate in being able to
   consult a number of authoritative reports and works on technical educa­
   tion. A list of these is given in Appendix I.

II.—THE FUNCTIONS OF TRADE AND TECHNICAL SCHOOLS.

3. It will be convenient at this stage to record the views formed
   by the Committee on the functions and objects of Trade and Technical
   Schools respectively. This will be followed by a statement in general
   terms of certain principles which, judged by experience elsewhere
   (as revealed in the publications referred to above) underlie the successful
   operation of schools of the latter category.

4. It is the function of a Trade School to provide post-primary
   vocational education which partakes more of the nature of a specialised
   apprenticeship than of academic training. It prepares boys for
   employment as artisans and handicraftsmen in skilled occupations.
   Manual dexterity is the outstanding qualification for success in these
   callings.

5. It is the function of a Technical School, on the other hand,
   to provide post-secondary vocational education which commences with
   a sound grounding in the scientific principles underlying professional
   and technical practice; which then proceeds to convey an understanding
   of the application of these principles to current practice in the pupil's
   intended vocation, and which finally, while developing the necessary
personal qualities, provides the pupil with sufficient general knowledge of that practice to fit him, after gaining practical experience, for responsible supervisory and, to some extent, managerial posts in that vocation. It is, then, the object of a Technical School to fit its graduates for a walk of life intermediate between that of the artisan and that of the fully qualified professional man. Any attempt on the part of a Technical School to widen its scope materially and, for instance, to usurp the functions of a university can only serve to prejudice its successful operation.

III—EXPERIENCE IN OTHER COUNTRIES.

6. The outstanding features of recent reports on technical education in England, Europe and India are the importance which is now attached to this subject and the zeal with which its development is being pressed. While conditions in Malaya are in many respects radically different from those in the countries mentioned above yet there are sufficient residual similarities to make it certain that Malaya will also have to conform, in some degree, to the general tendency. It must be remembered, too, that saturation point has been reached and passed in those types of employment for which Malayan secondary education fits the products of the local schools and that new avenues of employment must be created. There is the increased specialisation in the technical services and in industry and also the general realisation that the country is over-dependent on technical and professional men from abroad. These, and other, factors indicate that a period of expansion in technical education in Malaya is now at hand and make well worth while a study of the methods used and the admitted mistakes of other countries.

7. While the Committee do not pretend that their study of the subject has been exhaustive it is clear to them that the general principles set out below should, in their application to Technical Schools, gain ready acceptance.

8. In no branch of education is there a greater need than in technical education to ensure a full measure of flexibility to render possible a ready response to changing external circumstances. Developments in teaching technique; improvements in the technical services rendered by public departments; the changes in industrial requirements and practice; the ever widening applications of science to technical services; all these demand a flexibility in organisation which must extend not only to syllabuses and curricula but also to staff, equipment and even the buildings themselves. There are, for example, numerous Technical School buildings, erected in comparatively recent years, which, though perfectly suited to their purpose at the time of their erection, are already obsolete and incapable, by reason of their solid permanence and cost, of adaptation to present needs.

9. If this paramount need of flexibility is admitted, the means by which full advantage of this quality can be reaped must be provided. While close personal contact between the school staff and the departments and industries served by the school may be sufficient for the purpose it cannot, depending as it does so much on the personalities of individuals, be regarded as permanently reliable. The generally successful solution elsewhere has been the formation of active and conscientious Standing Advisory Committees.

10. Co-operation between Technical Schools and the secondary schools whose pupils are to be given a technical education has also proved, elsewhere, to be desirable. In the Federated Malay States there should be little difficulty in arranging this since a single authority—the Education Department—is responsible for both.
11. Since one of the main purposes of the school is to instil into its students an understanding of the correlation of scientific principles with technical practice it is evident that classroom work, standing alone, would be of little avail. It is, therefore, imperative that liberal provision for laboratory, drawing office, field and workshop instruction should be made and that the division of time between practical and theoretical teaching should fully recognise the claims of the former. It follows that there must be a certain amount of manual work and that students will necessarily have to overcome the all too prevalent conception that a white collar and clean hands are essential to the dignity of a Technical Assistant.

12. Writing of the period of transition from school life to full-time employment, the period, for instance, spent at a Technical School, an eminent French authority has said, "If, at this time, a boy works hard for three years he will probably work hard all his life". That is a proposition which it is easy to accept and hours have, it appears, been fixed in Technical Schools, especially in Europe, with some such consideration in mind. The hours of instruction there seem to be never less than 36½ and in a number of Technical Schools they reach 54 per week. In addition there is, of course, preparation. Any conclusions which may be drawn from this must, however, be reviewed, in their application in Malaya, in the light of the readiness with which the Asiatic will, if unduly pressed, exercise his uncanny powers of memorisation to the detriment of the proper assimilation of the knowledge which it is desired to impart to him.

13. There seems to be very general agreement that in Technical Schools, as in Trade Schools, classes should be conducted by technical men with practical experience in the vocations they are teaching. In Holland, for instance, before the teacher of a technical subject is allowed to teach he must have spent several years in industrial practice. This, of course, applies to the specialised teaching and not to the instruction in general subjects in which the classes consist of students taking several different courses. But even in the latter the connection between theory and practice should be maintained by illustrations and examples taken from the pupils' future vocations.

IV. THE DEVELOPMENT OF THE KUALA LUMPUR TECHNICAL SCHOOL.

14. We feel that this review of the general principles which have gained acceptance in other countries should be followed by an account of the evolution of the Kuala Lumpur Technical School in order to indicate the directions in which progress must be made if it is to attain modern standards and take its proper place in the educational system of the country. It will be appreciated from Appendix II to this report, which outlines the development of the school, and from the more detailed information concerning existing conditions contained in later sections of this Report that the school has had a somewhat chequered career. Though definite recommendations for its progressive development, not only as a means of supplying Technical Assistants to Government Departments but also as a means of qualifying Malayan-born youths for technical employment outside Government Service, have been put forward it has, until now, proceeded from makeshift to makeshift. The decision of Government to provide new buildings, implying also a decision to work to a settled policy in future in connection with the school, is, therefore, all the more welcome.
V.—THE VALUE OF THE RESULTS OBTAINED BY THE TECHNICAL SCHOOL.

15. While it is obvious that the school has suffered from many handicaps it is nevertheless certain that it has been an important influence in enabling Government Departments to provide the efficient public service which is expected of them. It has added to the range of employment available for locally-born youths and qualified them for advancement in the Technical Departments and, to a slight extent, in industry. Financially it must be regarded as having given a good return from the expenditure incurred. Abundant support for these statements will be found in Appendix III which contains extracts from the replies to that part of the departmental questionnaire (referred to in para. 2 above) which asked for the opinions of departments on the value to them, of the Technical School.

VI.—NUMBER OF RECRUITS REQUIRED BY DEPARTMENTS.

16. As a preliminary to a decision as to the courses which should be provided and the accommodation and staff required it is desirable to consider the probable future requirements of Government Departments and also to estimate the capacity of non-Government employers to absorb students of the Technical School on the completion of their courses.

17. The salary schemes of the Technical Departments provide for the recruitment of youths from the secondary schools. They are appointed in the first place as apprentices for four years. From two to three years of this period is spent at the Technical School. We have obtained estimates of departmental requirements for the next ten years. These indicate that to meet their requirements provision should be made for not less than 130 apprentices at the Technical School. Details are given in Appendix IV. We consider these figures to be the most reliable guide to Malayan needs at present obtainable though it must be realised that no precise estimate is possible since the incidence of booms and slumps on future recruiting cannot be foretold. Moreover no department can, as yet, be regarded as having attained in personnel a state of equilibrium in which annual recruitment will, within limits, be a steady function of the total establishment.

VII.—NON-GOVERNMENT STUDENTS.

18. It would seem, therefore, that a school with accommodation for from 130 to 150 students should be sufficient to satisfy official requirements for some time to come. There remains the question of the private or fee-paying student and this invites consideration of, firstly, the absorptive capacity of industry and, secondly, the obligations of Government in relation to the provision of Technical School education.

19. The experience of the Technical School itself is not of much value as a guide to the absorptive capacity of industry. It is true that fee-paying students have been admitted in small but increasing numbers since 1933 until, now, there are thirty-three of them. But it has been the Principal's practice to admit only those applicants who were able to show some indication of being able to obtain suitable employment on the completion of their courses. A number of them, part way through their courses, obtained apprenticeships in Government Departments. With possibly one exception all who completed them satisfactorily have obtained employment and even the departmental apprentices who were supernannuated as inefficient appear to have succeeded in obtaining technical employment. The following extract from
a letter (dated 4.8.38) from the General Manager of a large electrical concern is of interest: "You will remember . . . who joined this firm from your school. We want others like him . . . have you anyone you can recommend . . . ?"

20. It must be remembered also that practically all non-Government employees of the Technical Assistant class—the class intermediate between the artisan and the university graduate—now in this country received their training abroad and that the Technical School is the only major contribution by any Malayan Government for the training of candidates for this type of employment. The school owes its existence to the requirements of Government Departments. The fact that it came to contribute even in a very minor degree towards the needs of private enterprise was not the result of any preconceived or deliberate policy on the part of Government. It appears to have been the result of the initiative of the Principal at a time when, owing to the slump, the school had a greater capacity than Government Departments could utilise.

21. It seems to us that mainly because there has been no ready supply of workers with Technical School education the structure of non-Government undertakings has developed in a form in which there is little room for the locally-born Asiatic of the Technical Assistant type. For instance, the answers to a recent questionnaire (issued by the Keir Committee) to the engineering profession disclosed that the number of qualified engineers employed outside Government service exceeds the number of Technical Assistants. If a structure of this nature is impossible on economic grounds for Government Departments it is unlikely to be the most efficient in industry. And, we repeat, it deprives Malayan-born Asiatics of opportunities for useful work of a responsible nature which the experience of Government Departments shows them to be capable of undertaking.

22. This brings us to two conclusions—

(i) Firstly, that from a survey of the present requirements of commercial and industrial undertakings in Malaya a definitely misleading deduction as to the openings which can be anticipated for Technical School graduates would be obtained. It is extremely difficult for an employer to assess the capacity of his business to absorb and the value to it of a class of worker of which he has had little or no experience. We have, therefore, preferred to rely on experience elsewhere (and in Government Departments here) which indicates that the value of technical education meets with ready recognition and have reached the conclusion that for a country with the population and wealth of Malaya a single Technical School of the dimensions we envisage is unlikely to do more than indicate what the eventual demand for Technical Assistants may be.

(ii) Secondly it seems to us that the secondary, possibly fortuitous, aim of the Technical School—that of providing for the needs of industry—must now assume an importance equal to or greater than its original object—the technical education of aspirants for posts as Technical Assistants in Government Departments—and that Government should recognise the obligation to provide this type of worker for industry as it has provided them for its own departments.
23. If we have stated this conclusion emphatically we wish to stress, with equal emphasis, the desirability of caution in developments in this direction. The expansion in the demand for men of the Technical Assistant class must, in view of the existing structure of established industries, of necessity be slow. While we do not suggest that the outturn of the Technical School could or should be kept precisely within the requirements of industry we consider that until the demand for its "graduates" has been stimulated by their proved usefulness no great and sudden expansion should be allowed. Such expansion would only serve to discredit the school with the parents of its "graduates". It is with this in mind that while we recommend that the new building should be designed for the ultimate accommodation of 300 pupils we suggest that the first step should be an increase in its capacity by approximately 50% to 200-220 pupils.

IX.—RECRUITING POLICY OF DEPARTMENTS.

24. We have been strengthened in the view that the Technical School should cease to be identified mainly with its function as the special means of educating Government apprentices and become an institution of recognised value to the community in general by our belief that it should be the policy of the Technical Departments—and in this we are supported by these departments—to recruit their apprentices, when conditions permit, not from youths who have just completed their secondary education but from private pupils who have completed or reached some particular stage in their Technical School courses. Here a saving clause in favour of the Malay States policy of giving preference to Malays is necessary. It can take the form of the provision of Technical School scholarships for Malays or the continuance, for them, of the present apprenticeship system.

25. The advantages of the proposed policy are very great. There will not only be a saving of Government money but a valuable reduction in the time interval which now occurs between recruitment and obtaining useful work from the recruit. Departments will not have to look so far ahead when framing their recruiting programmes. But the greatest advantage of all will be in the attitude of the Technical School student towards his studies. That, very naturally, when the element of subsequent competition for employment is absent, as with the present generation of apprentices, tends to be more easy-going than is desirable. The presence of private pupils in the school has already made this evident.

26. We understand that there is a possibility of the Loke Yew bequest for technical education being applied to the new Technical School. This appears to us to strengthen the arguments in favour of making adequate provision for private pupils.

X.—QUALIFICATIONS FOR ENTRY TO THE SCHOOL.

27. Although there is no set rule the Principal has, in respect of private students, in practice, made the School or Matriculation Certificate the minimum educational qualification for entry to the school. In departmental salary schemes the Junior Cambridge is, generally, the minimum qualification required of applicants for apprenticeships, but, in practice, only candidates with the School Certificate are accepted. Local (Malayan) birth is, of course, insisted on.