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TRAINING OF TEACHERS AND INSTRUCTORS FOR VOCATIONAL EDUCATION

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PREPARATORY NOTE

This paper, instead of being directed explicitly to the situation in Latin America, presents considerations of a general professional character.

Similar basic conditions in different regions have led to recognition of the need for vocational education and the subsequent recognition that systematic provision must be made for recruiting and training teachers in this field. Naturally, the need was recognized first in those countries where the industrial transformation took place earlier. The purpose of this paper is to draw from experience some information and ideas which may be helpful to those who are responsible for planning the recruitment and training of vocational teachers in other regions.

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TRAINING OF TEACHERS AND INSTRUCTORS
FOR VOCATIONAL EDUCATION

by the United Nations Educational, Scientific and Cultural Organization

Increasing attention to the professional training of vocational teachers, supervisors and administrators is paid today in highly industrialized countries by competent authorities, usually the authorities of public schools and of institutions of higher education concerned with teacher education. Progressive leaders in education, industry and labour believe that the key to efficient and effective training in modern skills and related technology - the skilled trades, agriculture and vocational home-making - is the competent, professionally trained teacher, both for the vocational education training programmes in schools and the works training programmes in industry.

The training of vocational teachers is now firmly established in many western countries and the need for it is increasingly being recognized in other regions as economic development proceeds. Some governments are providing teacher training specialists to less industrially developed countries under their bilateral technical assistance programmes. It is significant that the United Nations Technical Assistance Administration, the Food and Agriculture Organization, the United Nations Educational, Scientific and Cultural Organization, and the International Labour Organization provide vocational training specialists, in their respective fields of competence, under the Expanded Programme of Technical Assistance. Besides this Technical Assistance Programme, UNESCO can also provide these specialists under its Programme of Participation in Member States activities.

The importance now attached to the subject is illustrated by its place on the Agenda of the Latin American Meeting of Experts on Steel Making and Transforming Industries (Sao Paulo, 15-28 October 1956). Again, the training of teachers will be a topic for discussion at a Conference on Vocational and Technical Education for Arab Countries of the Middle East, to be held in Cairo in December 1956, with assistance from UNESCO and other Specialized Agencies.

1. Beginnings of National Programmes

A study of the development of vocational teacher training reveals that, while there had been a few earlier experimental programmes of vocational teacher training in European institutions, it was not until comparatively recently that the highly industrialized countries of the West developed local, state and national programmes.

Thus, in the U.S.A., the first systematic programme on a national scale was established in 1917. The professional preparation of "manual training" teachers had in part contributed to an appreciation of the values which might be obtained from the professional training of teachers of related vocational subjects.

The Smith-Hughes Act of 1917 was remarkable in that while providing for a national system of vocational education, it simultaneously provided for the preparation of teachers. ("An act to provide for the promotion of vocational education; to provide for co-operation with the States in the promotion of such education in agriculture and the trades and industries; to provide for co-operation with the States in the preparation of teachers of vocational subjects; and to appropriate money and regulate its expenditure.")

The Act illustrates the powerful effect of initiative by the federal government when coupled with grants-in-aid to cooperating states. Within the ten months following the signing of the Smith-Hughes bill, 46 States had accepted the law and a national programme of vocational education, with its accompanying development of vocational teacher training, was a reality. In 1918, the sum of \$ 500,000 was appropriated for the purpose of preparing teachers, supervisors and directors of agriculture subjects, teachers of trade and industrial subjects and of home economics subjects. Yearly since then, the sum of \$ 1,000,000 has been made available to the States. Much more, of course, has been spent yearly by the States and local community boards of education on vocational teacher training.

The resources thus made available have allowed the accumulation of much experience, experimentation and research.

Three examples may be cited of contemporary practices in training teachers for vocational training.

2. Vocational Teacher Training in Germany ^{1/}

The "class-teacher" system prevails in many parts of Germany, and requires vocational teachers to combine a broad range of qualifications including full mastery of their trade subject, a thorough general education and a grasp of economic and social studies. A knowledge of pedagogy and love for teaching are said to be prerequisites. To qualify as teacher trainee, a candidate must possess a secondary school diploma (4 years elementary and 9 years of secondary school), and at least 2 years of trade training and experience ending with a journeyman's (skilled trade) examination. In addition, the trainee must pursue for 3 academic years courses in natural science, technology, pedagogy, economics and political science, and, finally, pass an examination for the trade teachers' diploma. A subsequent year of practical teaching under the guidance of experienced educators, combined with further preparation, is required for the second professional examination.

3. "Training College for Technical Teachers" ^{2/}

In England, the Ministry of Education opened in 1946 emergency training colleges for technical teachers at Bolton, Huddersfield, and London. These colleges now continue their work in a permanent form under the three Local Education Authorities concerned. Candidates must have attained their 25th birthday, must satisfy the college authorities that they possess suitable qualifications and experience in their occupation, and suitability for training as teachers. A full time training programme of one academic year is offered including:

- a) general theory of education;
- b) teaching methods;
- c) teaching practice (12 weeks, supervised);
- d) social and industrial studies;
- e) general course in English and speech.

This course does not include training in the skills and technology of the specialized trade-engineering group, printing trades, painting and decorating, etc. Since instructor trainees are competent and experienced skilled workers, the aim of the college is to make them competent, professionally trained teachers of their trade or occupation.

^{1/} "Problems of Vocational Education", an International Survey.

^{2/} Catalogue, London County Council - "Training College for Technical Teachers".

4. "Industrial Teacher Training College", Cairo, Egypt

The Egyptian Government has recently completed the construction of a vocational teacher training institution, the first of its kind in the Arab States of the Middle East. The Government has advised the neighbouring States that the college would accept, as from the date of its opening, in the Autumn 1955, qualified foreign students from the other Arab States. The college operates a full-time, 4-year training programme for prospective teachers in the following trades: machine shop practice; foundry practice; electrical trades; automotive trades, and woodworking trades. The Director-General of Vocational Education of the Ministry of Education had planned recruiting professional teacher trainers from abroad. Some measure of Technical Assistance has already been provided by the UNESCO mission already at work in Egypt; more specialists may be attached to this mission in order to cover the following courses: trade analysis and job-sheet writing; curriculum construction; theory of vocational education; history of vocational and technical education; administration and supervision of vocational education; applied sciences, etc. Classes are organized both for the full-time prospective vocational teachers (trainees in the college), and for part-time employed trade teachers and administrators, evening and/or vacation periods. The regional character of this institution, and the modern plans for the training of trade teachers indicate that industries of the Arab States of the Middle East will have an increasing, potential supply of skilled workers.

5. Forms of Vocational Teacher Training

Specialists in the field of vocational education are generally agreed as to the desirability of recruiting as prospective teachers those who combine the necessary craft skills and experience in industry with a knowledge of the related technology; where competence in these areas is lacking, the need to supplement the normal teaching programme with training in the missing skills and knowledge is fully recognized. Once this fundamental principle is recognized, the problem of the professional training of the competent and experienced skilled worker as a teacher is considerably simplified.

/Organized vocational

Organized vocational teacher training, like organized vocational training, provides a logical path to effective performance avoiding many of the pitfalls which accompany learning by trial and error. Teacher training programmes have taken three main forms:

- a) full-time (resident, pre-employment) training for prospective vocational teachers;
- b) part-time training for prospective teachers; and
- c) in-service training of employed teachers.

Variations in type, content and length of training in each of these forms exist from country to country.

The following list of teacher training courses is typical of the courses offered in teacher training programmes for vocational teachers in undergraduate and graduate degree-granting institutions of the United States.

Industrial Education Objectives	Shop layout and Management
Principles of Vocational Education	Shop Planning
History of Vocational Education	Trade and Job Analysis
Foundations of Industrial Education	Occupational Analysis
Professional Problems	Curriculum Construction
Vocational Education - Secondary School	Safety Education for Vocational Teachers
Methods in Vocational Education	Visual and other Sensory Aids for Teachers
Techniques of Evaluation in Vocational Education	
Vocational Guidance	Labour Problems - Labour Laws
Introduction to Education	Diversified Occupations
Philosophy of Education	Field Work in Vocational Education
Educational Psychology	Research in Vocational Education
Introductory Sociology	Observation and Practice Teaching

Full-time vocational teacher training curriculum in accredited institutions of higher education also include general cultural courses, history, foreign languages, science, mathematics, art appreciation, etc.

/In specialized

In specialized institutions and/or training programmes designed to meet the needs of prospective trade teachers with limited trade training and experience, shop and laboratory courses are required, selected in relation to the particular trade to be taught by the prospective teacher.

Supervised observation and practice teaching in schools is a standard requirement for all teacher training courses. It may be carried out in vocational schools or vocational training departments of technical, secondary schools, and comprehensive high schools. Sometimes also it is carried out in connection with on-the-job training in industry. Conferences are scheduled and reports, based upon trainee observations and teaching assignments, are generally required.

Part-time training for prospective vocational teachers is, as a rule, organized and carried out under the direction of State and/or Local Boards responsible for vocational education - sometimes, by the vocational school or industrial plant needing teachers. Courses may be offered in the evenings - after work hours - or Saturdays and are usually of short duration, largely for selective purposes and as an introduction into trade training methods for beginners. The content of these courses is likely to include shop training methods, trade analysis and job-sheet writing, principles of vocational education and safety education.

In-service training of employed vocational teachers may take several forms:

- a) short, intensive, college courses of from two to six weeks, sometimes followed by examinations;
- b) winter evening classes, once or twice a week, one or two hours per evening; and
- c) Saturday morning classes, two or three hours.

Some State Departments of Vocational Education employ itinerant teacher trainers who organize and teach special courses in shop methods, trade analysis and instruction sheet writing, theory of vocational education, etc. These itinerant teacher training courses are prepared, in the main, for the newly employed and inexperienced trade teachers. Some local school systems and some vocational and technical institutions organize and offer on the job, professional teacher training programmes and

/employ a

employ a full-time teacher trainer. For the experienced trade teachers, modern practice calls for refresher courses, and, at regular intervals, renewal of employment in undertakings for short periods in order to keep them up to date on current industrial trade practices. It is the modern practice of the competent authorities to consult representatives of industry and thus insure the co-operation of employer and worker organizations in carrying out effective in-service training programmes for vocational trade teachers.

6. Characteristics of a Modern Vocational Teacher Training Programme

a) Proper selection of trainees, prospective teachers

The prospective teachers must possess the trade competencies (standards) set for the programme and an interest in teaching others. Personal qualities of leadership, integrity and ability to work harmoniously with others are important characteristics.

b) Adequate scope of the training programme

The training content, skills and related technical knowledge, should be developed in relation to the needs of the trade students to be taught by the prospective teacher, and, when possible, the content and standards established for the teacher training programme should be agreed upon (in collaboration) by professional vocational educators in consultation with representatives of industry and labour. The training programme will be efficient and effective in proportion as it turns out trade teachers who are competent to meet the established standards.

c) Vocational teacher competency ^{3/}

In final analysis, can only be measured on the job - by evaluating the professional skill, efficiency and effectiveness, of the trade teacher in training trade students. Relevant factors are: typical jobs taught (coverage of the trade skills); degree of repetitive training; relation of technical information taught to typical jobs (is related information taught in connection with and at the time the student is working on the typical jobs?); shop management (does it follow closely the procedures within industry?); and the safety record in the shop (does it adequately reflect proper emphasis upon training on safety practices in industry?).

^{3/} "A Procedure for Evaluating a Local Programme of Trade and Industrial Education", American Technical Society, and "An evaluation of Local Programmes of Vocational Education in Agriculture", Vocational Division, Bulletin N°240, Federal Security Agency, Office of Education, Washington, D.C.

/d) Importance

d) Importance of professional qualifications

The professional competency of the teacher trainers and administrators responsible for vocational teacher training is basic to the operation of an efficient and effective teacher training programme. While the establishment of standards of certification may involve national, state and local laws (or may be set by administrators and supervisors or by the teacher training institutions) - the importance of the qualifications of the teacher trainer should receive close attention, and as high a set of standards should be agreed upon by the responsible authorities as conditions will permit. The qualifications of the teacher trainer should include: pre-employment training in a skilled trade and/or apprenticeship, perhaps works training (work experience); satisfactory trade employment including leadership experience; professional training and experience as a trade teacher; and professional teacher trainer education, preferably ending in a graduate degree in vocational education with major work in teacher training. At present standards vary from country to country: from no professional teacher education at all, to that of a Doctor's Degree in some professional education institutions.

7. Characteristics of a Professionally Trained Vocational Teacher

In addition to knowing his trade occupation, the professionally trained vocational teacher should possess other qualities both as a person and a teacher.

a) He should have the ability to distinguish clearly the relation of vocational education to general education.

b) He should be able to analyse his occupation or any of its typical job operations, and be able to determine the elements of a trade and the skills and related knowledge a learner should be taught.

c) He should be able to organize his training programme to conform with the typical job requirement of his trade, in a logical sequence; to isolate teaching units into operations and teach the related knowledge applicable to the operations; and to draft instruction sheets.

/d) He should

d) He should possess leadership qualities and the ability to deal effectively with learners either under organized group school training conditions or under works training conditions, if the programme is within industry.

e) He should be fully aware of the economic and sociological value of vocational training for employment in industry.

f) He should possess a knowledge of safety education, safety devices used in his trade, and the laws governing accidents in industry.

g) He should possess a reasonable knowledge of Labour Laws and current information about employer and labour organizations, and he should maintain satisfactory contacts and working relationships with representatives of industry and skilled workers in his trade or occupation.

h) He should have confidence in his profession as a vocational teacher, acknowledging his responsibility for conducting an efficient and effective vocational training programme for industry, and he should continue his professional growth through attendance in in-service professional training courses and through periodic employment in industry.

i) He should possess knowledge of an approved procedure for evaluating the efficiency and effectiveness of his training programme: the content of his curriculum; the methods of training; and the progress made by his students (the trainees' trade competence).

Quite apart from the vocational teacher's competence in training students, an additional professional quality, which is often overlooked, is the ability to maintain satisfactory professional relations with his colleagues who teach other subjects. A properly trained vocational teacher must have learnt how to respect his colleagues and their fields of service; on the other hand, he must himself possess the professional competence and cultured personality which will command the respect of these very colleagues.

8. Results of improvement and expansion of vocational teacher training programmes and trends

In recent years improvement in the professional training of vocational and technical teachers, due, in part, to many experiments and modern research in the fields of vocational education, has made possible and desirable closer coordination between instruction in theory and training in

/trade skills.

trade skills. There has been parallel improvement in and coordination of the various factors of vocational education in several directions; pre-vocational training at the elementary, secondary and post-secondary levels; closer integration of general and vocational courses; more emphasis upon the promotion and organization of adult, part-time and evening vocational classes for workers; and, finally, closer cooperation between school authorities, industry and labour in the development of apprenticeship training programmes. An additional result of the improvement in vocational teacher training, which is almost world-wide, is the great increase of both general vocational content courses and specialized pre-employment, trade courses in technical secondary schools and general or comprehensive high schools.

There has been a limited movement, in some areas, by the competent authorities (public school authorities in States, for instance) to provide trade-teacher-coordinators (at public school expense) for training apprentices on-the-job in industries, where a sufficient number of trainee apprentices warrants the organization of shop and related technical classes.

The increased supply of professionally trained and competent trade teachers has made it possible, in recent years, greatly to multiply in certain countries, the number of cooperative, part-time vocational training programmes (sometimes called "sandwich" course) offered by the competent authorities with the cooperation of industry. In certain countries, much prominence has of late been given to this "sandwich" scheme in which alternating periods of up to six months in each year are spent in industry and in the school or college. In the majority of these schemes, the student is serving an apprenticeship to a firm which accepts responsibility for school fees and for maintenance during the period of full-time attendance at school, but variance in these arrangements is obviously possible. A further alternative is to be found in the provision of full-time courses of two or three years duration for selected students who have satisfactorily completed their period of apprenticeship and wish to prepare themselves for appointment as technicians rather than as

/craftsmen. Generally

craftsmen. Generally speaking, industry is giving more and more attention to training newly employed workers before they are placed on the job. Retraining of persons displaced because of technological changes (unemployment) in industry also utilizes the services of an increasing number of vocational teachers.

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