STANDARD PROCEDURE FOR DEVELOPMENT OF

TRAINING CURRICULUM

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JAPAN INTERNATIONAL COOPERATION AGENCY
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Curriculum Development is only the first step, but at the same time one of the most fundamental processes in the whole training activity. Success of a training project will already be half obtained, if the most appropriate training curriculum matching the real training needs is developed, based on preceding elaborate situation analysis and planning. This is so important and fundamental that much amount of time and manpower are necessary, and also specific techniques are required for collecting appropriate data and information, analysing them for training purposes, and applying the results for development.

A good engineer is not always a good trainer. All experts despatched to developing countries by JICA for the purpose of technology transfer are good specialists having excellent expertise in their own field of activity. However, it is not necessarily their own speciality to transfer their expertise effectively and efficiently to their counterparts. Different types of knowledge and skills are required for effective transfer. Our present trial is to develop a standard procedure for developing effective training curricula which will allow JICA's experts, who might have little experience in training so far, to develop adequate training curricula only by faithfully following them. But it is really a very ambitious one, and requires time.

Consequently, for the first trial we decided to take up rather a simple case as an example, and expand it later to a more general one. For this purpose, vocational training activity is selected as the example where many curricula elaborated for Japanese trainers by the Ministry of Labour of Japan already exist.
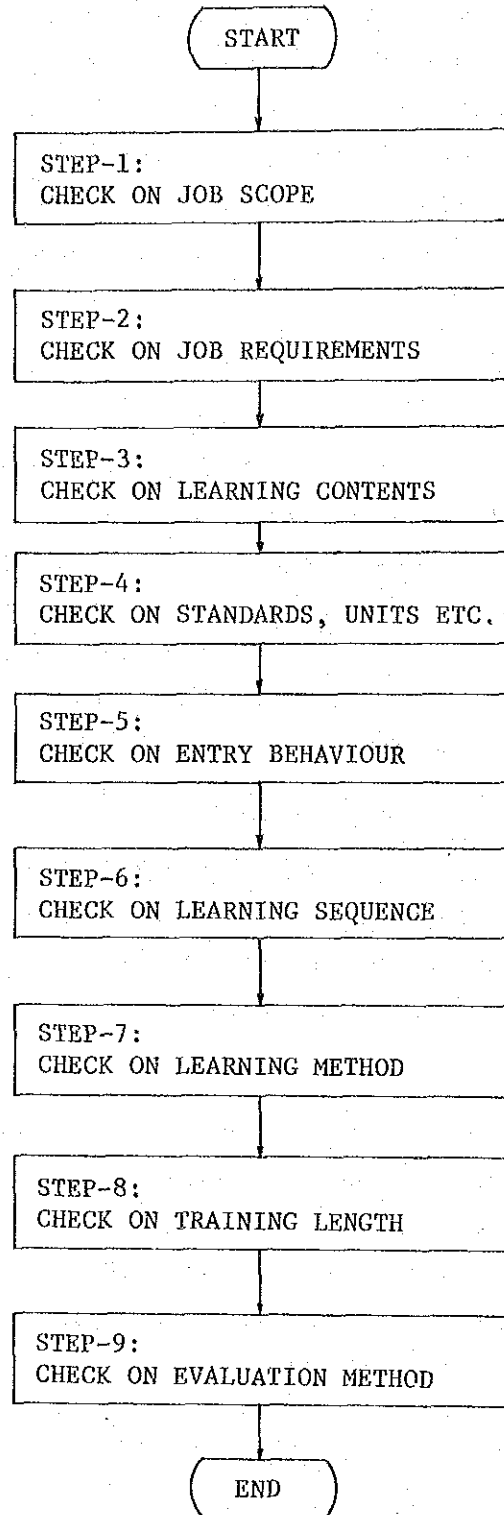
We will describe here our comments and check-points from the view point of training to modify and improve these curricula to make them more suitable for the real training needs of the country in question, by correcting them or adding to them, taking into consideration the difference of situations of training circumstances between the country and Japan.

FLOW-CHART FOR CURRICULUM DEVELOPMENT

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                    │    START    │
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           ┌───────────────▼───────────────┐
           │ STEP-1:                        │
           │ CHECK ON JOB SCOPE             │
           └───────────────┬───────────────┘
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           ┌───────────────▼───────────────┐
           │ STEP-2:                        │
           │ CHECK ON JOB REQUIREMENTS      │
           └───────────────┬───────────────┘
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           ┌───────────────▼───────────────┐
           │ STEP-3:                        │
           │ CHECK ON LEARNING CONTENTS     │
           └───────────────┬───────────────┘
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           ┌───────────────▼───────────────┐
           │ STEP-4:                        │
           │ CHECK ON STANDARDS, UNITS ETC. │
           └───────────────┬───────────────┘
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           ┌───────────────▼───────────────┐
           │ STEP-5:                        │
           │ CHECK ON ENTRY BEHAVIOUR       │
           └───────────────┬───────────────┘
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           ┌───────────────▼───────────────┐
           │ STEP-6:                        │
           │ CHECK ON LEARNING SEQUENCE     │
           └───────────────┬───────────────┘
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           ┌───────────────▼───────────────┐
           │ STEP-7:                        │
           │ CHECK ON LEARNING METHOD       │
           └───────────────┬───────────────┘
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           ┌───────────────▼───────────────┐
           │ STEP-8:                        │
           │ CHECK ON TRAINING LENGTH       │
           └───────────────┬───────────────┘
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           ┌───────────────▼───────────────┐
           │ STEP-9:                        │
           │ CHECK ON EVALUATION METHOD     │
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STEP-1:   CHECK ON THE DIFFERENCE OF JOB SCOPE

To study the scope of all jobs which trainees will be involved
in their future assignment after completion of the course in order to
know if they are covered completely by the training units in the
existing curricula.

Trainees are going to carry out their jobs, independently or in an
employed status. Therefore, training must be planned in order to enable them
to fulfil their duties at the expected level of society immediately after they
complete their training courses. For this purpose it is necessary to know
whether most trainees have to work independently or in the employed status
after their completion of the course, and what kinds of jobs they are going to
do in their future assignment. In this case vague guessing of the contents of
their jobs only by their common names or titles must be avoided. Some jobs
are generally named from social customs and this varies depending on the
country, region, organization and other factors. For example, tasks conducted
under the job title of Welder or Pipefitter in Thailand are not necessarily
involved in the job scope of "Yoosetsu-koo" or "Haikankoo" defined by the Ministry
of Labour of Japan. Or, in Indonesia, it must be verified by all means what
people in charge of tasks which are included in the job scope of "Seikan-koo".
"Seibi-koo" or "Tobi-shoku" in Japan are called. All tasks involved in a certain
job title should be identified in conformity with the actual situation of the
country concerned. They are then listed in a task list of the job, and checked
if appropriate curricula can be developed by the combination of training units
found in the curricula of Japan, covering all job requirements.

STEP-2: CHECK ON THE LEVEL OF JOB REQUIREMENT

To check the level of the job requirements of the trainee's future assignment, and study if they fully correspond to that of existing curricula of Japan.

It is desirable that the technology level to be attained by the trainees after the completion of the course is a high one, but this is naturally restricted by many constraints, such as entry level of the trainees, allowable length of training, policy of the training organization and so forth. Therefore, it is necessary to know about the policy of the training organization whether they intend to bring up workers, skilled workers, technicians or engineers, and also about the social demand for the level of job requirements for workers, skilled workers, technicians and engineers in each business field and trade. Then training should be planned to make them learn substantially necessary matters to be able to attain the required level efficiently and effectively. Necessary information for this purpose can be collected by discussion or interview with specialists, future employers and job holders of the country concerned. If they have some official examination systems for qualification of workers for certain trades, their levels can be referred to as a measure. Level of job requirement corresponding to the real needs of the society or training organization thus clarified should be compared with that of existing curricula, and training units corresponding to the necessary level are taken up to develop necessary curricula.

STEP-3: CHECK ON THE LEVEL OF LEARNING CONTENTS

To check the training contents and training equipment from the view point of their adaptability in the country concerned.

Training units which are included in the existing curricula of Japan, and the levels of which correspond with those required by the respective society or the training organization are selected from the existing curricula of Japan in STEP-1 and STEP-2 mainly from the view point of job scope and job requirement. However, if technology or equipment to be used in the learning units are too sophisticated, and not in general use in the country concerned, it is useless for the trainees to learn how to use them. If they are still using certain equipment, such as manually operated machines which seem to be already obsolete in Japan, but more adaptable for the country, judging from actuality of condition of infrastructure, learning contents or equipment used in the learning units in Japan are not adaptable to the country, either. For example, the automatic balance is most widely used to measure the weight of something in Japan nowadays, but it is very scarcely used in developing countries, and they commonly use manual balances instead. In such a case it is necessary to make them learn how to use manual balances and not automatic ones, otherwise they will learn in vain.

STEP-4: CHECK ON STANDARDS, UNITS, SAFETY AND POLUTION CONTROL

To check whether the standards, units, safety rules and environmental regulations applied in the training units of curricula in Japan are adaptable in the country concerned.

JIS standard and the metric system are naturally applied in the training units in the curricula developed by Ministry of Labour of Japan, and for equipment supplied by Japanese Government for its Aid Programme. But in some developing countries other standards or unit systems inherited from European countries have already been commonly used. It is not desirable to apply the JIS standard or metric system to the training without due consideration, even if it is a project of the Japanese Government Aid Programme, and proper modification or correction must be taken, if necessary. Otherwise it might produce confusion among trainees after training.

As for matters concerning safety, industrial hygiene and pollution control, they are highly legislated and protection devices are well furnished in Japan. However, the degree of conciousness and legislation for these matters vary from country to country. Our common sense is not necessarily theirs, and most types of safety precaution devices are not available there. No matter how training in uses of certain devices is carried out in some dangerous work, if the suitable device is not available on the market there, such training is not only useless, but also it might spoil the morale of trainees and discourage them from training. Therfore, careful study should be done on the legislation condition, social customs, conciousness, availability of safety devices and others in advance, and caution must be exercised in designing training units in order to make a realistic solution.

STEP-5: CHECK ON THE ENTRY BEHAVIOUR

        To check if the entry behaviour of the trainees for the
training organization corresponds with that of curricula in Japan.

        In STEP-2 and 3 training objectives to be attained by the trainees at
the end of training were firmly established. Then it is necessary to analyse
the capability of the trainees, already acquired before training. This
capability is called Entry Behaviour, or Readiness, and the difference between
training objectives and entry behaviour is called the training gap which is
the very one that should be bridged by training. The lowest academic career
level assumed to develop the vocational training curriculum in Japan is the
junior high school graduate. The limit of academic career of the applicants
for the training organization naturally depends on its policy. The official
level of capability of the applicants can be estimated by studying contents
of curricula in the corresponding school, their job careers, contents of the
jobs, appraisal etc. in the country. However it is impossible to analyse
their actual entry behaviour without examination. The examination or tests
should be given on the subjects and matters, applied as basis for curriculum
development in Japan, and other additional curriculum and learning units
should be developed, if their level is not satisfactory to be applied to the
curriculum of Japan. In applying such kinds of examination or tests to the
applicants, it is recommended to let them know in advance in order to obtain
their good cooperation that these examinations are only to analyse their entry
behaviour for the purpose of developing curricula, not to appraise the
capability of the individuals.

STEP-6: CHECK ON THE LEARNING SEQUENCE

To prepare a list of training units selected in the preceding steps and arrange them in the order and sequence in the most effective, and efficient way for learning.

Order and sequence of learning should be decided by taking into consideration the mutual dependancy among training units. Learning should start at the point of existing knowledge and skill of the learner, and further learning built on previous learning, gradually increasing in difficulty. As soon as possible after he acquires the necessary knowledge, the learner should be given the opportunity to put this to practical use.

It is important that the content of the training is developed to a pattern which helps the learner to learn. Broadly, there are three ways of structuring the pattern.

i) Whole —→ Parts —→ Whole

The whole content of the learning can be covered in broad outline, for example, in a training design workshop the cycle of training design can be usefully described. Then each item is dealt with in depth.

ii) Parts —→ Whole

If the whole is too complex and an explanation only confuses the learner, each part may be dealt with separately and brought together as a whole at the end of the training. This approach is suitable where each part is in itself complete.

iii) Part Sequence

There are various ways of assembling the parts so as to ensure that newly learned parts are integrated with parts learned previously.

Progressive Part Sequence

A, B, A + B, C, A + B + C, D etc.

Cumulative Part Sequence

A, A + B, A + B + C, etc.

Reverse Cumulative

Z, Y + Z, X + Y + Z, etc.

Isolated Part Method

A, B, C, D, E, F, G, A + B + C + D + E + F + G

STEP-7: CHECK ON THE LEARNING METHOD

To design training events in order to fully motivate trainees and encourage them to learn.

Our training does not intend to bring up robot-workers who execute their jobs mechanically without any interest, only following the operation procedure or as they are told by the senior operator, but aims at human capabilities development where trainees can work with a certain discretion, developing much interest in their job, by understanding their responsibilities and the significance of their jobs fully.

This type of training can not be done by the conventional trainer-centred training in which training is carried out by cramming knowledge into the trainees' head one-sidedly in a complacent way by the trainer. In the field of human capabilities development training, it is the learners themselves who play the leading role. Learners learn voluntarily for themselves, following instruction or programmes provided by instructors, individually or in a group, experiencing and discovering new things.

Instruction is helping people to learn. Major roles of instructors are observing carefully the progress of learning of each learner, motivating them, correcting them and advising them if necessary, but never teaching them directly. Experience proves that it is difficult for a man to memorize correctly and apply to another case what he is told, but on the other hand he can memorize very well what he has experienced or discovered himself as it gives him strong stimulus, and motivates him for further learning.

However this type of training can only be done by elaborately planned training programmes which require plenty of manpower and time for development in advance. Although it has also been proved that training of this type, in spite of much manpower and time requirement, can pay finally in comparison with other traditional types of training from the viewpoint of effectiveness, and efficiency, in most of cases, actual working conditions in the developing countries are too limited for elaboration of such a training programme. In such cases, however, the best effort should be made to adopt as much as possible of this learning principle, in designing, to make learners actively participate in learning, not by one-sided lecture, but by asking them frequent questions, giving them opportunities to consider by themselves, or make them discuss in a group etc.

STEP-8: CHECK ON THE TRAINING LENGTH

To compare training length of the curriculum composed of training units taken from an existing one with that actually allowed for the training project in question, and adjust the former to the latter if the former is longer.

As existing curricula are developed for execution in Japan for Japanese trainees, necessary time required for their full execution may vary depending on the country concerned. But exact estimation of time requirement can only be made by experience. When training length estimated by summing hours required for the training units of existing curricula exceeds the allowable length limit for the project, it should be adjusted to be within the allowance. For this purpose training units for subjects not absolutely necessary are omitted, leaving the subjects which must be learned.

In organizations of a life employment system as in Japan, employers prefer their fresh employee at recruitment, to have basic capabilities to be able to learn his duties by OJT, and develop them further after employment rather than the ability to fulfil them at some expected level immediately after his employment which is usually the case, in many developing countries having the contract employment system. Therefore the essential thing is to take up the most substantial subjects first, and to bring up workers who can execute certain simple actual jobs at some expected level of skill, and who has the attitude to learn for himself and can develop what he learns further after employment. The principle of learning such an attitude was mentioned in the preceding step.

STEP-9: CHECK ON THE EVALUATION METHOD

To plan how to evaluate the training process, and attainment of objectives, and how to feed back the evaluation results for further improvement of the training.

In STEP-2 training objectives are established. The training objectives include not only the final ones of a training project, but also those of each training unit which is learnt one by one in accordance with the learning order set in STEP-6; What a learner will be able to do at the end of this syllabus, chapter, module and training unit. These objectives should be always described by expression of the external behaviour of the learner, objectively observable by the third person. By an expression, for example, "to be able to understand the structure of a pump", the observer can not tell if the learner has fully attained his objective or not. By an expression, however, "to be able to draw a model of the structure of a centrifugal pump, and explain its working principle" the observer can verify his attainment easily by making him draw the model and explain orally its working principle. Such expressions of objectives help the learner to grasp the whole picture of what he is going to learn at the beginning of the learning event, motivate him, and at the same time serve the evaluation of the attainments.

During the whole training process, progress of learning and attainment of objectives should be always evaluated carefully. If problems or inconveniences are found, the result should be fed back to the original training cycle, and necessary measures for correction or improvement should be taken. Modern training philosophy says that bad progress of a learner in learning should not be charged to the learner, but to the training design itself. Whan an instructor says "I tried to do my best to teach him, but he could not follow me", he says so by imagining complacently that he really taught him. Of course these are words of self-descipline for the professional instructors, and not applicable directly for the JICA experts. They should recognize the meaning of these words carefully, and make efforts to devise various ways for motivating, stimulating trainees in learning, and for easy learning of sophisticated subjects.

JICA