PRE-TECHNICAL ENGLISH

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The expansion of high technology equipment sales into foreign markets has opened a Pandora's box for the professional trainer. Rapidly expanding markets present new training challenges particularly in Latin America, Africa and the Middle East.

Not only do unskilled, non-English speaking workers have to be trained in the use of complex, modern equipment, they must also be trained to understand and use a whole technology often formulated in the English language.

A wide gap exists between the technologies to be assimilated and the trainees' educational backgrounds. In addition to language and educational barriers, a whole range of cultural differences must be taken into consideration before any effective training program can be designed.

In response to such challenges, a new training area, "pre-technical English," has been developed. It is designed for implementation of international training programs for both business and government.

Since many foreign languages cannot match English for communicating information in a precise and standardized way, it is necessary that a great deal of technical training be carried out in English. Not only does this expedite the training process in general, it also prevents misunderstandings caused by limitations in literal translations of English into other tongues.

For example, a recent study conducted by the Turkish government found that it would take 15 to 20 times more money and time to translate and update an air force manual from English to Turkish than it would to train Turkish pilots to read and speak English.

Such conditions have led to the creation of a new area of training (pre-technical English language training) and trainers who specialize in this area. This kind of training can achieve higher quality training at a lower cost, for a company or government institution than in-house resources could.

Transcultural Training

A lot more than technology is involved in teaching foreign students about complex technical equipment. Whenever students of one country are being taught by an instructor from another there are cultural differences apart from the subject matter being taught which affect the learning process. Transcultural training must include cultural awareness, differences and similarities between the cultures as well as preparing the individuals involved to handle "culture shock."

When foreign students come to the United States for technical training, they must be introduced to the American way of life, the study habits of the American educational system. They must be told what is expected of them within the format of the training program in which they will participate.

Conversely, when American trainers instruct students in foreign countries, they must be introduced to the students' way of life. In addition, they must understand the students' way of thinking, which may vary dramatically from that of students in the United States. When this is the case, new methods must be developed to deal

with these differences. Many hidden factors and unconscious assumptions (i.e., logical thinking, cause and effect reasoning) surface as major areas of cultural differences. They must be dealt with effectively.

Learning Differences

More than just a language barrier must be overcome when Americans train foreign students. A whole gamut of learning differences should be considered.

For many foreign students, the entire U.S. educational process is new and different. In some countries, all learning from grade school through university is accomplished through rote memorization. The ability to read analytically, as we know it, is undeveloped and what we consider studying is almost unknown to them.

In certain Middle Eastern countries, for example, firm directions and support are necessary for a training program. Students are accustomed, culturally, to function as members of a group rather than as self-directed individuals. Trainees need an obvious structure that makes everything seem obvious and fixed. They prefer training that is individualized, and self-paced. Classroom training certainly can be scheduled, but the majority of instruction needs to be directed toward the individual. In a classroom situation, many Middle Eastern students for example, are more comfortable in a traditional setting with an assigned instructor, rather than having a rotating series of instructors. In keeping with this preference for the traditional, students often prefer textbooks, manuals (adapted to their cultural and educational background), formal examinations and competitive grades. They are often more receptive to instructors who fit their image of a traditional teacher (i.e., "The School Master").

Specific Cultural Adjustments

Probably the single most important factor in determining the probable success of a training program is the previous level of education of the students. People who do well in training and educa-

tional situations tend to stay in them longer and perform better. So, the higher the educational level, generally the more "teachable" the student. However, new emerging countries have people with little or no formal education who become excellent students.
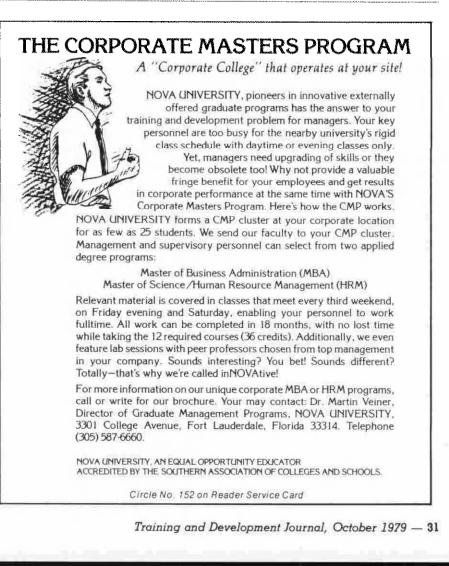
Most manuals in the United States are written for students with previous "pre-technical" backgrounds and some mechanical abilities usually at the 12th grade level. This assumption cannot be made with foreign students. Often they do not have this level of education or pre-technical ability. One way of overcoming this is to simplify technical manuals to a one word/one meaning system. This avoids the confusion caused among foreign students when several words in English have the same meaning. This simplification limits the amount of vocabulary to be learned, and avoids technical misinterpretation.

Another important program design feature is the establishment of strong disciplinary rules and procedures to avoid disruptions and assure a smooth-running program. Persons from different cultures have different motivational levels. This needs to be accounted for along with cultural characteristics such as competitiveness versus peer group cooperation. Posting grades in some cultures could provoke serious problems, while in others it increases motivation.

It is advisable to provide on-going supplemental or corrective training to keep all students on the same level. To be effective, the trainer must constantly test students to assess their degree of comprehension of material. This can help avoid embarrassing situations for students, such as having to be dropped for falling behind or be recycled. In many countries, this is regarded as a serious disgrace.

Pre-Program Analysis

The program design will depend mainly on the location at which the training will be given, and the stu-

dents' background. The setting and background of the students determine much of the training format and content. All the factors discussed previously are examined, such as educational background of the students, cultural and ethnic characteristics, learning aptitude as a group, and previous technical experience. Having established the incoming student profiles, and terminal-program objectives, technical goals can be established. These include the technical levels to be achieved, and the degree of assistance available from the manufacturer-client. The steps from incoming level to terminal goals can then be organized and quantified into appropriate instructional modules and units.

Personnel selection must then be made. This may be the most important factor in the success of any overseas training program. Because of the trainers' level of involvement with foreign students, excellence in personnel is crucial. Having to replace an instructor can cost a lot of time, and loss of credibility for the contractor.

The curricula are then designed taking into account overall methodology, specific techniques to be employed in the program. Technical materials are assembled. The training program design can then be finalized.

Training Program Outline

To outline a pre-technical training program for purposes of illustration, let's make the following assumptions:

A. The students are Saudi Arabians.

B. They have between a sixth and ninth grade education.

C. Between 150 and 200 students will be trained during a two-year period.

D. The training will take place both in the United States and Saudi Arabia.

E. The students have minimal English-speaking backgrounds.

F. The technical field of follow-up training is highly sophisticated.

Company X has a requirement to provide English, pre-technical, technical and product-specific on-the-job (OJT) training to Saudi nationals as part of an equipment contract they have been awarded. They, in turn, have subcontracted the English and pre-technical phase to Company S, which specializes in this area. These two segments will be combined into a "pre-technical English training program." To accomplish this training within the medium of the written and spoken English word, it is necessary to provide specialized instruction in the kinds of technical English appropriate to the students' educational background and technical skills to obtain optimal training effectiveness. All materials should be uniquely designed for each training program. This includes one word/one meaning technical manuals.

Setting Goals

When setting goals for a training program it is important to determine how these goals are to be measured. In our system, each goal outline is followed by the measurement criteria to be used:

A-1 *Goal:* To equip the students with substantial amounts of, and competency in, the desired kind(s) of technical English.

A-2 *Measurement:* At least 90 per cent of the students should attain a 70 per cent or better score on progress and performance evaluations designed for the program, including a final test battery, designed to the client's specifications within the context of the program and based on actual technical texts.

B-1 *Goal:* To bring the students' pre-technical level to a point at which they can enter into the technical and OJT phase of training.

B-2 *Measurement:* Trainees should show the ability to follow the technical and OJT training successfully with nine of them passing final technical tests with 70 per cent or better scores.

C-1 *Goal:* To produce a complete training curricula to achieve goals A-1 and B-1, in a format that will permit both classroom and self-study modes.

C-2 *Measurement:* Company X should review the material at predetermined intervals, prior to and during the first training cycle.

D-1 *Goal:* To design and conduct appropriate transcultural student and staff training.

D-2 *Measurement:* Training efficiency and student motivation should be increased and the number of employees that return early from their overseas assignment should be kept to a minimum.

E-1 *Goal:* To provide the necessary professional training, management and curriculum design staff to successfully implement the program.

E-2 *Measurement:* The degree of overall program success should be high.

F-1 *Goal:* To simplify Company X's training manual.

F-2 *Measurement:* A shorter overall training program with higher achievements by students should result.
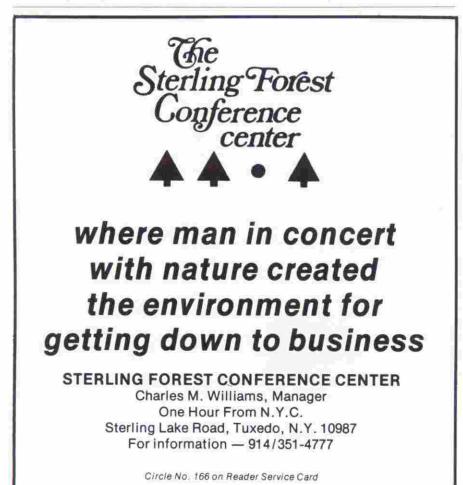
Program Design

The first step is to determine the vocabulary and pre-technical skills the students need for their specific technical area. Then, the pre-technical English program material is developed into a hierarchical, sequential system integrated into the program.

While instructors present the various terminology, related vocabulary and pre-technical data, they also will review, reinforce and further develop the students' overall command of English as a second language in all skill areas. Using the vocabulary and skills the students will need in their OJT, while teaching them English increases the students' motivation, attention span to the material learned.

The curricula are then broken down into common-core and specific-skill areas to further specialize the training the students receive, in accordance with their technical area training needs.

Program Implementation

The criteria used in the selection of the personnel for training in both countries (the U.S. and Saudi Arabia in this case) will differ slightly. The professional experience and background should be the same for both groups. In addition, the trainers selected for the Saudi Arabian location should have a strong background in overseas assignments and a successful track record in foreign programs in English as a second language.

The staff/student ratio for both programs should average one staff member for every eight students, with the understanding that because of remedial work and student abilities, some classes may have as many as, but no more than, 12 students.

The students are divided into classes based on their learning ability, skill classification and previous background. Each class will have a main instructor for the majority of the class day. Days are broken down into separate segments, each followed by short breaks. The instructional approach will be geared to sophisticated audio-lingual teaching techniques, reading for comprehension, specially designed techniques, to ease the acquisition of specific skills and some platform/lecture instruction.

The materials will be geared to a student workbook as well as study guides supplemented by audio visuals. A supplemental learning center will be established for self-paced, self-study remedial and supplemental work that individual students may need. This remedial system is efficient and permits a maximum amount of individual attention to compensate for various learning and background differences among students. It further increases the ability of the training contractor to graduate more students on time and at the required level.

Avoiding recycling is especially important in the Middle East, where pride and honor are of extreme importance, and being recycled would be a personal affront to the student.

Company Technical Assistance

The pre-technical English program is a part of an overall coordinated training program being provided by Company X. As such, efforts of both participants are to be combined and coordinated to insure that the two phases fit well together and are integrated

into the overall training program. The goals, program parameters, and program analysis will be done jointly with the assistance of Company X. Some of the areas of assistance Company X can provide include:

A) Existing training materials.
B) Technical subject matter specialists.
C) Training and public relations films.
D) Word lists if available; pertinent information in OJT.
E) Training rules and regulations that are part of normal Company X training programs.

Quality Assurance and Technical Manual Simplification

The training contractor should build in a quality assurance program that satisfies both U.S. government requirements and assures the prime contractor of high quality training. Quality assurance is an objective, visible and measurable component of the entire training program. A quality assurance program should have three separate and mutually supportive components:

1. A quality control, validation and revalidation system;
2. A professional staff evaluation and review system;
3. A student monitoring, evaluation and counseling system.

Technical manual simplification must be started when the vocabulary list for the pre-technical English program is compiled in conjunction with Company X's training and technical staff. The vocabulary in the technical and English phases must be identical and the meanings similar. This simplification can easily be done in conjunction with the pre-technical English curricula development and then the two phases will complement each other in the overall program.

Additional Suggestions

Within the boundaries of the training program described, a number of recommendations exist that can further enhance the effectiveness of a pre-technical training program.

In addition to suggestions for revising technical manuals and establishing built-in remedial or supplementary programs, programs can be custom designed to meet the needs of specific groups.

For example, language training should be specifically tailored using names of relevant persons and situations to enhance interest and understanding among the students.

Labor costs can be reduced by moving away from a totally instructor-centered approach in language training. Audio-visual systems can establish an effective yet economical supplemental means of training. Flexible training times should be scheduled whenever possible to meet the needs of both student and instructor.

It is vital that trainers be trained to communicate on a cultural level with students from the countries in which they will be teaching.

It is a good idea to keep in mind the need for eventual maintenance and refresher courses after the initial training program has been completed.

In many cases, a certain percentage of the trainees will continue with additional training back in the United States. These people will need further English language training. If they have been effectively taught listening and reading comprehension skills during the initial program, their higher-level training will be easier and more successful.

Technical English training is a new area with a lot of new challenges to be worked out. However, with the proper human and technical resources, cultural awareness, it is possible to execute a cost-effective, pre-technical training program on highly complex subject matter with a great deal of success.

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