DOCUMENT RESUME

ED 140 845 IR 004 955

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TITLE Software for Managing the Process of Manpower Training for Economic and Industrial Development.
INSTITUTION GTE Sylvania Training Operations, Waltham, Mass.
PUB DATE 1 Apr 77
NOTE 36p.

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS Cross Cultural Training; *Developing Nations; *Economic Development; English (Second Language); *Foreign Students; Human Resources; Language Instruction; Management Development; *Manpower Development; On the Job Training; Performance Based Education; *Training; Transfer of Training; Vocational Education

ABSTRACT

This document discusses the training capabilities, software, and related products of GTE Sylvania Training Operations (STO). With the rapid emergence and development of the Third World, the technical knowhow of large manufacturing industries has become a marketable commodity in the international transfer of technology. Manpower training and human resource development are considered essential to this transfer, to provide qualified specialists to take over the operation of factories, businesses, and institutions of higher education in the developing nation. STO has developed a number of curricular materials and evaluation instruments for its training programs, which are available and can be useful to technical and language training programs, whether academic, commercial, or industry-related. These include an English Proficiency Test, a Language Competency Scale, an Oral Interview Rating System, a Cross-Cultural Orientation Course, a Modern Concepts of Management Course, Applied Sciences Aptitude Test Batteries, and English for Special Purposes Curriculum, Intensive Courses in several languages, and other useful materials discussed in this document. (Author/BM)

Software For Managing The Process of Manpower Training For Economic and Industrial Development

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April 1, 1977

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DATE: April 1, 1977

LENGTH: 30 Pages

DESCRIPTIVE TERMS: Economic and Industrial Development;
Educational and Curriculum Development;
English (As A Second or Foreign Language);
International Transfer of Technology;
Language Training;
Skill Evaluation and Testing;
Technical and Management Training;
Training;
Vocational and Manpower Training.

ABSTRACT:

The document discusses the training capabilities, software and related products of GTE Sylvania Training Operations, which is widely recognized in the business of international training and educational development. At the present time, with the rapid emergence and development of the Third World, the technical knowhow of large manufacturing industries particularly in the United

States has become a marketable commodity in the international transfer of technology. Manpower training and human resource development is considered essential to this transfer, to provide qualified specialists to take over the operation of factories, businesses and institutions of higher education in the developing nation.

Sylvania Training Operations has over 19 years experience in designing and conducting customized and specialized training programs for over 60,000 people from nineteen different countries. These services take the form of economic and industrial planning, skill and remedial training, vocational management, business management training, recruitment, testing and selection of trainees, providing on-the-job training for trainees, foreign student placement in American universities and subsequent monitoring and integration of trained graduates into the industrial system of their country in order to eventually assume full maintenance, operational managerial responsibilities.

A unique aspect of Sylvania's training programs is the design and presentation of English as a Second Language (ESL) and English as a Foreign Language (EFL) training programs for technical trainees and students in the U. S. and in the home country. Sylvania's concept of "training" as a systems approach also applies to language learning. In the several language institutes and programs which Sylvania operates both in the U. S. and abroad, the curriculum is characterized by several unique features: intensive language study into which study of technical content area courses is gradually phased, a competency-based, task-referenced curriculum incorporating technical English as well as texts and materials related to students' specialities.

A special part of language training is an integrated cross-cultural orientation program for foreign students in the U. S. This same approach is used for intensive training and acculturation programs in other languages, including Arabic, Farsi, French and Spanish, adapted to the needs of Americans doing business in developing nations.

Sylvania Training Operations has developed a number of curricular materials and evaluation instruments for its training programs, which are available and can be useful to technical and language training programs, whether academic, commercial or industry-related. These include an English Proficiency Test, a Language Competency Scale, an Oral Interview Rating System, a Cross-Cultural Orientation Course, a Modern Concepts of Management Course, Applied Sciences Aptitude Test Batteries, an English for Special Purposes Curriculum, Intensive Courses in several languages, and other useful materials, discussed in this document.

PART I:

The Importance of Training in Technological Transfer and Industrial Development, and the Educational Contributions of Sylvania Training Operations

In recent years, the nations of the Third World have emerged with a political and economic force that draws the attention of the industrialized societies of the West. As these developing countries press to acquire the most advanced technology for their rapid industrial expansion, both these countries as well as those that have developed the technology to meet these needs, have come to recognize two significant facts: first, the importance of technical knowhow as a marketable commodity, and second, the necessity of training qualified specialists to assume key roles and responsibilities in business and industry, to act as human resources in the process of industrialization. GTE Sylvania has developed both the knowhow and the training capability, and is concerned about making both available to developing societies.

GTE Sylvania is a subsidiary of General Telephone and Electronics Corporation (GTE), a worldwide organization whose business involves communications, manufacturing, services and research, as well as technological and industrial development throughout the world. As a part of this organization, Sylvania Training Operations (STO) is responsible for defining and developing human resources to meet global challenges in the transfer of technology and industrialization, and for responding to current needs in international education and training. To achieve these objectives, STO adopts a systems approach tailored to the individual needs of each client. The chief capabilities of STO in the field of international business are:

- engineering and furnishing a variety of specialized training projects, both large and complex;

- undertaking educational products research and development; and,

- providing consulting services to meet the needs of government, business, industry and education.

In order to accomplish these tasks, STO has developed expertise in business management, program administration, educational development, curriculum planning, teacher training and transcultural awareness.

For over nineteen years, STO has designed and conducted customized training programs for over 60,000 people from nineteen countries. These programs, currently in operation both in the U. S. and abroad, include technical and vocational schools, on-the-job training courses and specialized vocational training systems in technology, engineering, electronics, telecommunications, and other fields, technical teacher training programs, management training, language instruction, state-of-the-art technology seminars and methodology workshops, university placement in the U. S. for foreign students, cultural orientations, counselling and monitoring services for foreign trainees in the U. S. A special feature of STO programs is the pre-entry level training which STO provides in these specialized fields for technician and engineering candidates. In order to manage and operate these various training projects, STO has developed the following systems:

1. Planning Support System
2. Facilities Planning System
3. Skill Training and Remedial System
4. Vocational Management System
5. Business Management Training System
6. Recruitment and Selection System
7. Student Placement and Monitoring System
8. Maintenance Support System
9. Language Training System

These operations are components of an integrated and coordinated process of manpower training and resource development. A staff of trained management, technical and educational specialists administers and coordinates each of the training systems to plan, implement and evaluate each specific project. It will be useful at this point to review the operation of these systems, and within each to highlight some specific software contributions to training.

A. Planning Support System

STO consults and plans with its customers in developing countries to identify specific needs, in their industrial or economic development projects, for material and human resourses and for kinds of institutions to be established, to estimate capital costs, and to assess training requirements. As such, it works closely with the project's decision-makers to design, implement and evaluate the project. Examples of the software used in economic and industrial planning are:

1. Job Descriptions and Training Requirements for Electronics and Manufacturing Industries in Developing Middle East Nations;

2. A Methodology of Curricula Construction to Support the Process of Economic Development;

3. Manpower Planning Seminar for Latin American Planners;

4. Labor Market Analysis: An identification of training and curriculum requirements for Law Enforcement Assistance Administration for a Northeastern Institution serving one of the largest U. S. counties.

B. Facilities Planning System

The facilities planning or engineering system includes a broad range of activities, involving conceptualizing the technical approach to a project, designing, cost estimating and constructing of support facilities for educational institutions, industry, electronic and satellite communications systems, and transportation and vocational schools.

Typical examples of education-related facilities which Sylvania has designed and installed are:

1. The GTE Proprietary Vocational School System;

2. The LEAA Vocational Training Center of Middlesex County, Massachusetts;

3. The Turnkey Vocational Training System including individual carrels;

4. Portable Language Laboratories for Language Training Programs;

5. Automotive Training Repair Facility; and

6. A Middle East Vocational-Technical System.

C. Skill Training and Remedial System

This is a training service that provides specific job-entry-level skill training to a customer's personnel. Emphasis is placed on the design and development of specialized modular courses which provide both theoretical and practical training in the skills specific to the job the trainee will hold as well as to job-related occupations. STO's approach to skill training and remedial support is best illustrated by its "DELTA" Integrated Learning System. Each student in a classroom or training environment is able to progress at a level commensurate with his capabilities, educational background, motivation and aptitude. This is not the typical generalized approach used in skill training courses for general employment. Its unique aspect is that the trainee benefits from a process of both short and long-term development, including orientation training, participation in industrial advisory committees and in industrial supervisor workshops, receiving core and on-the-job training in industry, remedial education, professional counseling, social services and follow-up, and most important, job placement and career development support by industry. STO's major contributions to skill and remedial training are:

1. The Common Core Training Concept, which provides that each project participant undergoing training in a particular

discipline receives a position commensurate with his ability and motivation, because he understands the basic theoretical principles of his speciality, its relationship to other specialities and its importance and place in industrial technology;

2. Task and Skill Analysis (TASA), a methodology used to identify qualitative and quantitative curricular, personnel and skill requirements for project staffing;

3. Design and Implementation of an International Police-Telecommunications Training Program;

4. Design and Implementation of Skill and Remedial Educational Systems for 350 inmates in the Massachusetts Correctional System;

5. Design and Presentation of 15 International Satellite Communications Orientation and Maintenance Courses; and

6. Design of a Programmed Instruction Course in Automotive Repair for the Chronically Unemployed and Disadvantaged.

D. Vocational Management System

Fundamental to STO's educational philosophy is the committment to the principle of using hands-on reinforced teaching in its delivery system. This philosophy is being carried out in the GTE Sylvania Proprietary Vocational Schools in the United States, as well as in five vocational schools in the Middle East whose training programs, STO designs, staffs and manages. Other activities include:

1. administration of a national seminar series of vocational/technical programs;

2. design of vocational curricula, in drafting, electromechanics, electronics, sewage treatment and auto repair; and

3. design of a national vocational training system for a developing African country.

E. Business Management Training System

In the field of management training, STO has developed a special curriculum, and conducts courses and seminars in human resource development to fulfill management needs, in U. S. firms as well as in developing countries. These training packages include:

1. Modern Concepts of Management, a course designed to train potential managers in the behavioral skills related to retail and commerce. The curriculum includes:

   a. decision making
   b. problem solving
   c. organizational diagnosis
   d. use of authority
   e. business and financial planning
   f. task-oriented team building
   g. effective communication

2. Seminars and courses conducted in:

   a. Digital Systems Design

b. Control Systems Technology (Fluidics in Automation)

c. Data Sensing, Processing and Information Management

d. Data Communication Systems and Multi-Media Instruction

3. Automated Management and Computer Assisted Instruction Systems:

a. Automated Command and Control Dispatch System, which is designed to evaluate basic system performance in an operational environment; this system has been put into effect in governmental offices and police departments, where such an automated system has increased efficiency and service.

b. The GTE Sylvania Computerized Training System (CTS), with course software, currently operating or in preparation, in:

- General: electronics, mathematics, language, medicine;
- Task-oriented: equipment maintenance, simulation, avionics, field radio repair.

CTS has capabilities for Computer Assisted Instruction (CAI) and Computer Managed Instruction (CMI), a data base subsystem, high level authoring language, expandable terminals for student and instructor users.

F. Recruitment, Testing and Selection System

STO's training programs, encompassing a wide variety of disciplines, are characterized by mastery-learning techniques and a competency-based curriculum and emphasize both understanding of the theory and acquisition of the practical skills. In order to provide ongoing quality assurance and control for all its training programs, STO has developed an integrated system of testing and psycho-technical evaluation, including standardized tests, uniform evaluation procedures, and measurement instruments, many of which are designed and developed by STO specifically for its training programs. STO undertakes the testing and selection of applicants for engineering, technician and management positions in Middle East factory systems, of Middle East candidates for matriculation in both undergraduate and graduate studies in the U. S. in engineering, technology and applied sciences, and of candidates for manufacturing, management and high technology positions. STO has a Testing and Selection Department responsible for planning for specific training programs and undertaking extensive research on the analysis and standardization of tests and measurement instruments. Specifically for its Middle Eastern and North African technical trainees, STO has developed:

1. an aptitude test in electronics, including basic theory, measurements, semiconductors, microwaves and circuits;

2. a speciality aptitude test for university engineering graduates entering advanced degree programs in advanced mathematics and physics;

3. a speciality aptitude test for technicians in basic mathematics and general mechanics; and

4. an English language proficiency test, which is discussed in detail below.

G. Student Placement and Monitoring System

This system is part of STO's total service to foreign national students who are studying in U. S. universities as part of a program of training for industrial development in their country. The student's academic and career development are carefully monitored to insure that their educational or training program is closely related to specific skill requirements and objectives of the project to which they will return. Scholastic progress, and the planning and meeting of objectives, are periodically reviewed with the student's home sponsor or supervisor. The system has the following features:

1. An Acculturation Package and Orientation Program for foreign trainees and students in the U. S. which includes:

   a. cultural oritentation to life in the United States, the character of American society, and study at U. S. universities;

   b. introduction to basic economic and financial matters (e.g., budgeting money, use and costs of needed services), to legal and governmental systems, status of foreign students, educational system, social customs and language usages;

   c. field trips and excursions to important cultural, educational, recreational and historical centers in the U. S.

d. family home-stays and organized social contacts.

2. Enrollment of students in seven (7) different degree programs in eight (8) universities across the United States.

3. Academic counseling and advisory services through weekly contacts.

4. Weekly progress reporting.

H. Maintenance Support System

This system is characterized by STO's singular committment to learning systems, software and hardware design criteria that are easily maintainable yet respond to the widest range of requirements. In addition, STO seeks to develop concurrently an in-country nucleus and support system that can be expanded. These principles result in a training system design that uses tested and validated curricular materials, standardized laboratory equipment and effective teaching methods and techniques. Sylvania assures that the immediate goal of implementation and maintainability, as well as the long-range goal of support and expansion, are achievable. By integrating the software and hardware components, STO achieves an educational/training process that is tailored to the specific needs of its customers. Examples of maintenance support operations are:

1. training native crews in Algeria, Chili, Ghana, Jamaica, Nigeria, Philippines, Saudi Arabia, South Korea, Thailand, Venezuela and other countries to maintain and operate telecommunications systems;

2. training teachers and trainers in Algeria to take over a five-campus vocational school system teaching American oriented technology, and to teach university undergraduates applied sciences and English language.

I. Language Training

GTE Sylvania has contracted with a number of developing and industrializing nations, including Algeria, Iran, Nigeria, Saudi Arabia, Venezuela, among others, to provide specialized training in technology, engineering and business management. Trainees are taught to acquire and develop skills related to their technical discipline, which will be necessary to assume positions commensurate with their ability and motivation in their country's expanded economy. To insure the rapid development of manpower with the necessary skills to achieve economic and technological development, these nations are not only sending students to the United States for study and training, but are establishing technical training institutes in their own country, where U. S. technology is taught by qualified American specialists under contract. Their goal is ultimately to train trainers and instructors in the country who can carry on the technical education. In training programs both in the country and abroad, English, particularly the technical language of industry and international business, is the essential medium of instruction and the instrument of communication for the transfer of technology.

1. Current Programs Operated by STO

STO has for over three years been providing language training both in the United States and abroad for trainees with a variety of academic and industrial requirements. The overseas programs include:

- Operation and staffing of the English as a Foreign Language (EFL) Department of the Algerian National Institute of Electricity and Electronics (INELEC) in Boumerdes, Algeria, which is a technology institute preparing engineers, technicians, applied technology research scientists and

instructors for the expanding needs of business, government, industry and education in Algeria;

- Operation and staffing of the English Language Training Program for plastics engineers at the Algerian Institute of Petroleum (IAP) in Annaba, Algeria;

- Total training (technical and linguistic), first in Algeria and then in the United States, of management candidates who, upon completion of on-the-job or academic programs in the United States will assume commensurate positions with the Electronics and Home Entertainment Products division of SONELEC (Société Nationale de Fabrication et de Montage de Produits Electriques et Electroniques).

- Planning and preparation for presentation of EFL training to over 1000 communications engineering and telephony specialists to be trained at the Telephone Development Program of the Telephone Company of Iran;

- Operation of the GTE Sylvania Management, Training and Conference Center in Massachusetts, where language training programs are conducted in English as a Second Language (ESL) for foreign trainees who are in the United States for extended stays for academic study, factory training, and work assignments in business and industry. In addition to English, other languages are taught at the Sylvania Center, including French, Spanish, Arabic and Farsi. Special intensive courses in these languages are adapted to the needs of American management and industrial personnel who are doing business in developing nations and need a working knowledge of the language.

2. Uniqueness of Sylvania's Language Training

The STO English Language Training programs differ in a number of important ways from standard ESL and EFL approaches of most academic, commercial and industry-related programs. First of all, the term ESL technically is designed for non-English speaking immigrants to, or eventual permanent residents of, English speaking countries. As such, it is closely associated with bilingualism and biculturalism. The foreign students, business and industrial personnel who are sponsored by their government or company to live, work and study in the United States for extended periods in on-the-job or academic training programs operated by STO, have many of the needs for cultural adaptation and linguistic interaction in the society that the immigrants and persons seeking residence have. But their main purpose is to function successfully in an academic, business or industrial situation, and to acquire proficiency both in the basic language skills and in the technical usage specific to their field of specialization. Therefore, their ESL training must be directed not toward the student's general socio-linguistic integration into an adopted culture, but toward the norms of work-related communication and the standards of social interaction necessary to facilitate such communication.

Moreover, while EFL usually designates study of English as a foreign language which is not necessarily the main vehicle of communication, the engineers, technicians, technology research specialists and teacher trainees studying English together with their content areas under STO programs in technical institutes in North Africa and the Middle East will use English, both written and spoken in factory situations, in research and as a medium of instruction in future training programs. For many people in these countries, English is becoming a second or even a third language. (In Algeria for example, which is

traditionally bilingual in Arabic and French, English is considered essential and may eventually even replace French as the technical-business medium.)

Another feature of the STO English language training programs, whereby they differ from most ESL and EFL curricula, both academic and commercial, is that they are adapted to the specific requirements of the trainees. They are not restricted to the acquisition of general conversation ability only, nor do they attempt to provide broad familiarity with the various types of conventional or literary English. Rather, they are for the most part technically oriented, emphasizing solid grounding in functional and situational communication, with lessons based on special vocabulary and grammatical forms of high frequency in the English of science, technology or business. The STO staff has developed a curriculum with basic English and special English, and with convertible features which permit its adaptation to groups specializing in telephony, manufacturing, data processing, physics or electrical engineering.

STO has drawn on its own extensive experience in communications and training in order to come up with a scientific approach to curriculum development and to present an integrated language system.

The STO language training staff, consisting of qualified instructors and specialists in applied linguistics, methodology of foreign language learning and teaching, and second language acquisition, have designed, tested and presented its system, which is called the "GTE - STO English for Special Purposes Curriculum." Since the content of this curriculum is tailored to business, science and technology, the STO Language Training programs

offer the possibility of phasing in technical content area courses early in the intensive programs. Such a curriculum plan provides flexibility of scheduling, insures quality and relevancy in training, offers substantial cost savings to the program by increasing efficiency and decreasing the amount of training time, and, of utmost importance, assures a high degree of motivation among students and trainees.

3. Results

The proven results of STO's approach to language training are the students themselves who have graduated from the GTE-STO Language Training Program (operated at training centers in the Boston area, where STO provides students with residence and recreational facilities, acculturation and orientation services, and the attention of a full-time staff of instructors, curriculum and testing specialists, counselors and social-cultural affairs coordinators). These students have been enrolled in undergraduate and graduate degree programs in engineering, science, business administration, technology, humanities and education in a number of American institutions of higher education, including the University of Arizona, Boston University, Brown University, Case Western Reserve University, Columbia University, University of Massachusetts, University of Missouri, New York University, Northeastern University, Stevens Institute of Technology, Worcester Polytechnic Institute, and other universities. The test of their proficiency in English and preparedness to undertake advanced studies and research in their field has been their ability to achieve high scholastic averages (a total average of B in course work, after a year of study) and to adapt socially and professionally to the new environment with success. Most students received advanced placement after CLEP or GRE exams, and have not had to continue basic English courses, or have progressed to advanced writing and literature classes.

PART II:

Skill Evaluation Instruments Developed by STO

In order to provide quality assurance and control in training, STO has developed an integrated system of evaluation. In addition to the selection and aptitude testing system discussed above, there are measurement instruments for English language placement and proficiency, language skill competency, ESL and EFL achievement and diagnostic testing, and oral proficiency rating. Although these instruments are the products of Sylvania's training programs, they are useful in testing, rating and measuring skill in any language training program, academic, commercial or industry-related. Of particular universal value and importance are the following instruments:

1. The GTE - STO English Language Proficiency Test

This test was developed by the English language instructors, curriculum development and test research staff at STO after over two years of use and pre-testing with foreign trainees and students studying English both in the United States and in the home country. Through frequent administrations, item analyses and revisions, it has been validated for use as a proficiency test, and is currently employed as a placement instrument for ESL and EFL programs in the U. S. and abroad. It has served, in addition to STO language training programs, the ESL department of a Massachusetts college, as well as a national technical training institute in the Middle East. STO performs ongoing analyses of the test, has established norms for previous testees, and is continuing to revalidate the test for various subject groups. The test is composed of 100 multiple choice questions, divided as follows:

Part I	Listening Comprehension (20 questions)
Part II	English Structure (35 questions)
Part III	English Vocabulary (25 questions)
Part IV	Reading Comprehension (4 readings, 20 questions)

A sample test package for administrators includes:

(a) administrative guide, which details administration procedures, correction norms, and instructions for hand scoring (the test may also be machine scored, using an Electronic Test Scorer like that developed by the 3M Corporation);

(b) answer key for scores;

(c) cassette recording for Part I;

(d) question booklet for Parts II, III, and IV; and

(e) answer sheet.

The test has the following general uses:

(a) as a selection instrument, for applicants or candidates who are expected to know English for work activities, academic study or specialized training programs. STO has established normative guidelines for foreign candidates, but the test may also be used for bilinguals in the U. S. or Canada;

(b) as a placement instrument, for candidates who have been accepted into or have begun ESL or EFL programs, and must be assigned, on the basis of objective performance, to discrete instructional levels;

(c) as a proficiency measurement instrument to provide an objective assessment of an ESL or EFL student's degree of proficiency during or after language training by comparison with norms of proficiency in English for subjects at large who have taken this test.

2. The GTE - STO Oral Proficiency Rating System for Interviews

The difficulty of defining and testing oral language proficiency has been discussed in a number of recent studies and papers (q.v. J. A. Upshur, "Evaluation of Oral Proficiency," Papers on Language Testing, 1967 - 74; B. Spolsky, "Language Testing - The Problem of Validation" TESOL Quarterly, 2, 2, 1968; R. L. Jones and B. Spolsky, Testing Language Proficiency, 1975, Center for Applied Linguistics, pp. 1 - 88). They all underscore the necessity of developing instruments for measuring oral communication competency. STO has long recognized this need as a part of training. Moreover, while a few oral proficiency tests are available commercially, they tend to be academic in orientation, or else geared to special interests, for example government, military or foreign service personnel. STO recognized the need for an oral interview test for use in recruitment and selection of candidates for training in business and technology, placement of trainees, and personnel hiring practices. The inadequacy of some of the methods for judging oral proficiency is apparent. Evaluations of the general subjective type are

facile and superficial, are not based on any specific strength or weakness, and are not useful for testing or placement purposes. Discrete point evaluations are theoretically impressive, but practically non-functional. It is impossible to examine all the structural items of a language in an interview or oral test, while a selection or sampling, no matter how specific to the test, does not take into account the fact that normal communication can occur without knowing any one specific item of grammar or vocabulary.

If we are simply content with whether, not how, a person can communicate in a second or foreign language, with no concern for professionally and objectively evaluating him in order to teach him, then we can justify using general subjective judgments. But we do not need professionals for such evaluations, since they are readily available from the student's everyday encounters with laymen and native speakers outside the classroom.

On the other hand, unless we are administering diagnostic tests, we do not need to know how many items a subject may know. Proficiency tests should measure the subject's ability to operate effectively in a specified socio-linguistic situation. He must therefore have adequate control of the signaling systems of the target language, as exhibited in his pronunciation, grammar and vocabulary, both general and specialized or job-related.

In STO's Language Training Program, various types of oral proficiency tests have been tried and used, including:

(a) controlled interviews, both general and situation-related, which are sometimes recorded, and are rated according to a carefully constructed scale;

(b) structured speech samples, e.g., readings and direct dialogs and narratives, which are rated against very specific criteria;

(c) tests of indirect speaking ability, e.g., cloze tests, sound and stress selection tests, etc.

But despite some of its disadvantages, including the fact that the rater and the environmental circumstances may adversely affect the reliability, the live oral interview is still the most natural and direct method of testing speaking ability. Indeed, there are a number of effective ways to satisfactorily increase the reliability of scored interviews, the most important of which are:

(a) to use precise, unambiguous and mutually exclusive behavioral statements for each level of proficiency;

(b) to assure that the interviewers and raters follow the same uniform procedures; and

(c) to avoid scorer bias and increase objectivity by providing at least two raters for each candidate who independently score the same performance.

Along these guidelines, STO has developed a system for rating the oral proficiency of a candidate in an interview. Total oral proficiency is recognized as being composed of these five elements: comprehension,

phonetic accuracy, grammar and syntax, vocabulary, and fluency. A rating sheet is used to help evaluate ability in these areas. Within each of the five areas, there are degrees of proficiency ranging from limited to extensive and each degree or level of proficiency is defined by a very precise behavioral statement. After listening to the interview, the rater evaluates the speech within each of the five categories by assigning the number of the proficiency description which best represents the speaking ability of the interviewee. The scores are totalled, the raters' scores compared, and the average taken. In the event of discrepency or disagreement, the average is taken or a re-evaluation made. When the final average score is agreed upon, this becomes the coefficient of proficiency, and this number corresponds to a Level of Oral Production Competency according to the STO Language Competency Scale, discussed below.

The STO Oral Proficiency Rating System for Interviews is useful for linguistic and personnel needs, and can be used to evaluate proficiency in any modern language.

3. The GTE - STO Language Competency Scale

The objective of STO's Language Training Program is effective communication in the target language. This communication involves an interrelated series of functional operations, using language, and related to specific situations. STO has defined the basic functional operations to reflect the language skills which are the goals of its language training. This system, called the GTE - STO Language Competency Scale, is used to measure the specific linguistic skills of a student in the four language areas of listening

comprehension, speaking ability, reading comprehension and writing ability. The effective performance of the skills within these areas which are specific to the various linguistic situations, i.e., academic, technical, or social, correspond to levels of language competence. The Scale has ten levels or ranges, beginning with the most basic skills or functions for listening, speaking, reading and writing at 0.5 and progressing to the most complex and developed skills at 5.0. It is important to note that the Competency Scale is not a rating system. It is not a set of value judgments or prescriptive statements. Each of these numerical coefficients is defined in the most precise descriptive terms, representing the level of language at which a person functions during the process of language learning or acquisition. The purpose of the scale is to help to standardize the objectives of course modules (e.g., general conversational language, language for special purposes, reading expository prose, writing business letters or academic papers, etc.) Another value of the scale is that it permits identification of consistent entry and exit levels as well as programmed achievement.

The STQ Language Competency Level, which can be used for any language, is normally established by proficiency tests or evaluations, like the two instruments discussed above, or through scores attained on achievement tests covering the structures and usage of the target language. The Scale also shows language acquisition as a quantitative and qualitative process, in which various kinds and amounts of readings, writing exercises, cultural briefings, lectures, and vocabulary can be introduced to train the student for basic interaction in the language community, use of subtechnical language, and use of language related

to his field of specialization. In conjunction with this Scale, STO has developed a Language Competence Matrix to show the essential components of language training, i.e., structures, content, and level of performance of communications skills.

Such an integrated and structured system permits the program managers, instructors, students and, ultimately the client or customer for STO's training services, to interpret the functional skill of the trainee or employee, and to insure an ongoing quality control of progress and achievement.

PART III:

Conclusion

It is hoped that this overview of GTE Sylvania's approach to manpower training, and of the software used in that approach, will be of use to educators, administrators, business and industrial managers, and scholars undertaking research in educational resources, with the aim of developing competency-based and skill-oriented curricula for use in vocational, management, technical and language training. Although a number of research projects and pilot programs in this area have recently been undertaken or are ongoing, there has been relatively little reporting on them. While curriculum research and product development is continually going on at Sylvania Training Operations, evaluation of existing programs and improvements are also occurring, and new training projects are begun. In an effort to provide a convenient, capsule summary of its training software, a list of the most widely useful products which have been developed and copyrighted by STO appears in the Appendix to this document. STO would be pleased to make any of these materials available to individuals or organizations interested in improving their own training/teaching methodology. Information and cost details are available on request through the author or directly from GTE Sylvania Training Operations, 100 First Avenue, Waltham, Massachusetts 02154; telephone number (617) 890 - 9200 or telex number 923322.

APPENDIX

A Bibliography of Training Software and Curricular Materials Published by GTE Sylvania Training Operations

1. Vocational and Manpower Training:

Centanni, F. A. (Manager, Manpower Development Training, STO)

A Plan to Design a Minimum Disruption, Low Cost Training Program for Inmates With Short Sentences. 1971. Sponsored under LEAA Grant No. 71-DF - 494.

A Training Approach for Hard-Core Unemployed. 1968. Submitted to 22nd Joint Study Group on Military Resources Allocation Methodology.

A Training Program for Designing an Economic Development Plan as a Basis for Identifying Future Manpower Needs. 1975.

Commonality: A Methodology of Curricula Construction to Support the Process of Economic Development. 1975.

Project Delta Training Program. 1968. Submitted to U. S. Department of Labor and Action for Boston Community Development, Inc.

Task and Skill Analysis: A Methodology of Curricula Development for the Disadvantaged. 1970. Sylvania Training Operations and California State Department of Education, Division of Vocational Education/University of California.

McGadden, J. R. (Manager, Instructional Systems Development)

The Development of Integrated Instructional Programs: Media Development and Training Services. 1975

2. Management Training:

Centanni, F. A.

Modern Concepts of Management Course. 1976.

3. Technical Training:

Common Core and Speciality Curriculum for the Technical Training Center of the Algerian Consumer Electronics Industry. 1976.

4. Cultural Materials:

Carson, W.

Cultural Orientation Course for U. S. Personnel on Work Assignments Abroad. 1975. (Data based on experiences in many countries, with special volumns devoted to Algeria and Iran.)

Killefer, B. and Norris, M.

Cross Cultural Orientation Program for Foreign Students of ESL in U. S. 1976.

5. Tests:

Sylvania Training Operations Electronics Aptitude Test. 1975. Test materials in both English and French.

Sylvania Training Operations Achievement Test for Fundamentals of Electronics, Tests A and B. 1974.

Sylvania Training Operations Aptitude Test Battery for Foreign Graduate Students in the United States (Physics, Mathematics, Mechanics). 1976. Test materials presently in both English and French.

Sylvania Training Operations Aptitude Test Battery for Foreign Engineering Candidates (Advanced Mathematics, Physics, Non-Verbal Analytical Logic). 1976.

Sylvania Training Operations Aptitude Test Battery for Foreign Factory Technician Candidates (Elementary Mathematics, General Mechanical Ability, Non-Verbal Logical Perception). 1976.

The GTE Sylvania Training Operations English Language Proficiency Test (tape recording and questionnaire). 1976.

The GTE Sylvania Training Operations French Language Proficiency Test. 1975.

6. Skill Evaluation Instruments:

Catoline, J. E. (Educational Development Specialist, STO)

The GTE Sylvania Training Operations Oral Proficiency Rating System for Interviews. 1976.

Litwack, D. (Language Instructor and Curriculum Development Specialist, STO)

The GTE Sylvania Training Operations Language Competence Matrix. 1976.

7. Language Training:

GTE Sylvania Training Operations English for Special Purposes Curriculum. 1977.

GTE Sylvania Training Operations Foreign Language Courseware Packages:

Farsi.	1975
French.	1976
Spanish.	1976
Arabic.	1977

8. Other Educational Planning and Development Software:

Catoline, J. E.

A Study Plan for the Design and Implementation of an Automated Management of Information System in Higher Education, 1977.

Iacono, M. (Curriculum Development Specialist, STO)

A Study Plan for the Implementation of New Training Techniques in Higher Educaiton. 1977.