CRITERIA IDENTIFIED BY AMERICAN PROFESSORS FOR SELECTING PARTICIPANTS FOR THE POLYTECHNIC INSTITUTE PROGRAM IN INDIA

A Dissertation

Presented to

the Faculty of the College of Education

University of Houston

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

by

Premila H. Vyas

June 1967

ACKNOWLEDGMENTS

Deep gratitude and appreciation is expressed to Dr. William O. Nesbitt, Chairman of the doctoral committee, for his guidance, help, and encouragement in planning and preparing this study. Special appreciation is expressed to Dean Hugh E. McCallick, College of Technology, for his guidance, help and encouragement. To the other members of the committee, Dr. Marvin Sterrett, Dr. Muse, and Dr. Austin, thanks are extended for their valuable suggestions.

Dr. Joe Wyatt, Director of the University Computer Center, Dr. Joseph Schnitzen, Director of Counseling and Testing, Dr. Hobart Osburn, Professor of Psychology, and Dr. John Cox gave invaluable assistance in preparing computer programs and analyzing data.

Many other people cooperated in conducting this study. Among these are the staff of the College of Technology who attended the institute program in India. Professors Willson and Martin from the College of Technology, University of Houston, deserve special mention.

Most of all a debt of gratitude is owed to the former Dean of the College of Education, Dr. Arvin N. Donner, for his interest and encouragement during the period devoted to the doctoral program.

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ABSTRACT

Vyas, Premila H. Criteria Identified by American Professors for Selecting Participants for the Polytechnic Institute Program in India. Unpublished doctoral dissertation, University of Houston, June, 1967.

This study was concerned with the establishment of criteria for selecting polytechnic institute participants in India. A questionnaire, based on the opinion of American professors, was devised to test six major categories: educational qualifications; experience background; academic background; age; professional status; and general characteristics. In addition, characteristics of American students preferred by the American professors were identified.

Means, standard deviations, coefficient correlations, and t-tests were used to analyze responses on the rating scales of Indian participants and preferred student characteristics.

The results indicate that diploma or degree holders, technicians, B.Sc. and M.Sc. with less than two years of teaching or industrial experience, and teachers with scientific or mathematical backgrounds should be admitted in the institute program. Participants should represent the entire range of the profession, be highly recommended by their principals, and be screened to ascertain their leadership qualities as well as personality characteristics.

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CHAPTER I

THE PROBLEM AND A PREVIEW OF THE STUDY

I. INTRODUCTION

Background for the Study

> The Ministry of Education recognizes that the critical gap between the engineer and the laborer must be closed. USAID/Education Division believes that there is a deficiency here which is reaching increasingly critical proportions as USAID's stimulus to the nation's industry is creating a huge demand for 'middle manpower' skills. The Planning Commission and Ministry of Education wisely moved toward establishing a polytechnic system to fill that void.[1]

This generalization from a recent report of the United States Agency for International Development (USAID) pointed out the importance of establishing polytechnic schools as USAID continued to assist in the development of India's economy. The same report mentioned the fact that the Indian Government had a desire to exchange new ideas between Indian and American educators at the secondary and higher levels.[2]

The summer institute program is one of several programs jointly sponsored by the USAID and appropriate agencies of the Government of India. Such programs offer an opportunity for American and Indian teachers and professors to exchange their

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[1]K. L. Khetarpal, Education Division Report 1952-1965, U. S. Agency for International Development, Education Division, New Delhi, December 31, 1965, p. 6.

[2]Ibid., p. 7.

views and to discuss their professional problems.

In recent years several academic programs have been initiated by the USAID in India to improve the standards of teaching, examination and research at the secondary, college, and university levels. One of these academic programs is the Summer Science Institute for teachers in science, mathematics, engineering and technology.

Summer Science Institute Program

These summer institutes are for science teachers in secondary schools and professors in universities, colleges, polytechnic institutes, and engineering colleges. Courses are offered for science teachers and professors in physics emphasizing the Physical Science Study Curriculum (PSSC) approach, chemistry stressing "CHEM STUDY", mathematics introducing the new approach in algebra and geometry, and biology emphasizing Biology Science Curriculum Studies (BSCS) material. Courses are also offered at higher educational levels in civil, mechanical, electrical and production engineering.[3]

The Summer Science Institutes started with four institutes for secondary science teachers in 1963 in collaboration with Ministry of Education of the Indian Government, University Grant Commission, and the United States Agency for International Development. The program was such a success that

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[3]Ibid., p. 24.

in addition, these agencies planned to impart new methods to 1,500 engineers and polytechnic faculty members from all over India through summer school programs in 1964 and 1965. The number of institutes grew to forty-four in 1964 and to ninety-four in 1965.[4]

The American Reporter recently further supported that there is a need for a number of increasing services of the science institute program. For instance, there were forty-three institutes for secondary school teachers in physics, chemistry, mathematics, and biology, thirty-five institutes for university and college teachers in the same subjects, eight institutes for teachers in polytechnics, and twelve for teachers in engineering colleges.[5] A further expansion of the program is visualized in subsequent years.

Polytechnic Summer Institute Program

A preliminary survey by Dean A. Ray Sims, College of Technology, University of Houston, revealed that the summer institute program would probably produce a greater immediate economic return if the new ideas and methods could be learned by the presently employed faculty and put in operation in their own institutions. The survey also indicated the need for improving teaching methods in polytechnic education and

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[4]Ibid., pp. 19, 23-24.

[5]American Reporter, (Delhi) August, 1966, p. 5.

recommended that informal seminars, discussion groups, and industrial field tours be used. These methods were mostly unique to polytechnic programs in India.[6]

As a direct result of Dean Sims' survey, four summer polytechnic institute centers were established in 1964 at Ahmedabad, Chandigarh, Jadavpur, and Madras. Four American professors were assigned to each center to teach courses in civil, electrical, mechanical, and industrial engineering. Sixty teachers from polytechnic schools in India were assigned to each center to study with the American professors.

This polytechnic institute program was such a success that in 1966 four more centers were added at Allahabad, Gauhati, Banglore and Patna. One additional American professor was assigned to each location, and a new subject, drafting and design, was introduced.[7]

II. DEFINITION OF TERMS

Karnes M. Rays pointed out two significant changes which have occurred in the definition of technical education. It has been broadened in its meaning to encompass programs

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[6]A. R. Sims, Dean College of Technology, University of Houston and Polytechnic Consultant, USAID, Polytechnic Education in India, "Polytechnic Education in India--A Critical Evaluation," prepared for Professor Humayun Kabir, Ministry of Scientific Research and Cultural Affairs, August 28, 1963.

[7]American Reporter, loc. cit.

designed to prepare technicians and semiprofessional personnel in many fields in addition to those that are related to engineering. There is now more general acceptance of the view that technical education belongs at the post-high school level, from the standpoints both of age and maturity of the student and of the difficulty and complexity of the subject matter. However, whether technical education should be considered an integral phase of higher education remains a major issue.[8]

Technical education in India includes all levels of preparation for mechanical arts, such as civil, electrical and mechanical engineering.[9] As indicated in Figure 1, it includes courses for post-graduates aiming toward research, for undergraduates leading to a bachelor's degree in engineering, for diploma seekers in junior technical school, and for apprentices in secondary schools.[10] The restricted concept of technical education associated with technician training in the United States of America is unknown in India.[11]

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[8]Karnes M. Rays, "Technical Education," Review of Educational Research, American Educational Research Association, October 1962, (Vol. XXXII, No. 4), Chapter VII.

[9]Donald G. Lux, "Technical Education in India," Comparative Education Review, February 1964, pp. 301-306.

[10]A Study of the Educational System of India and Guide to the Academic Placement from India in United States Educational Institutions, World Education Series, A service of the Committee on Foreign Students of the American Association of Collegiate Registrars and Admissions Offices, 1964, pp. 27-28.

[11]Donald G. Lux, loc. cit.

STRUCTURE OF TECHNICAL EDUCATION IN INDIA*

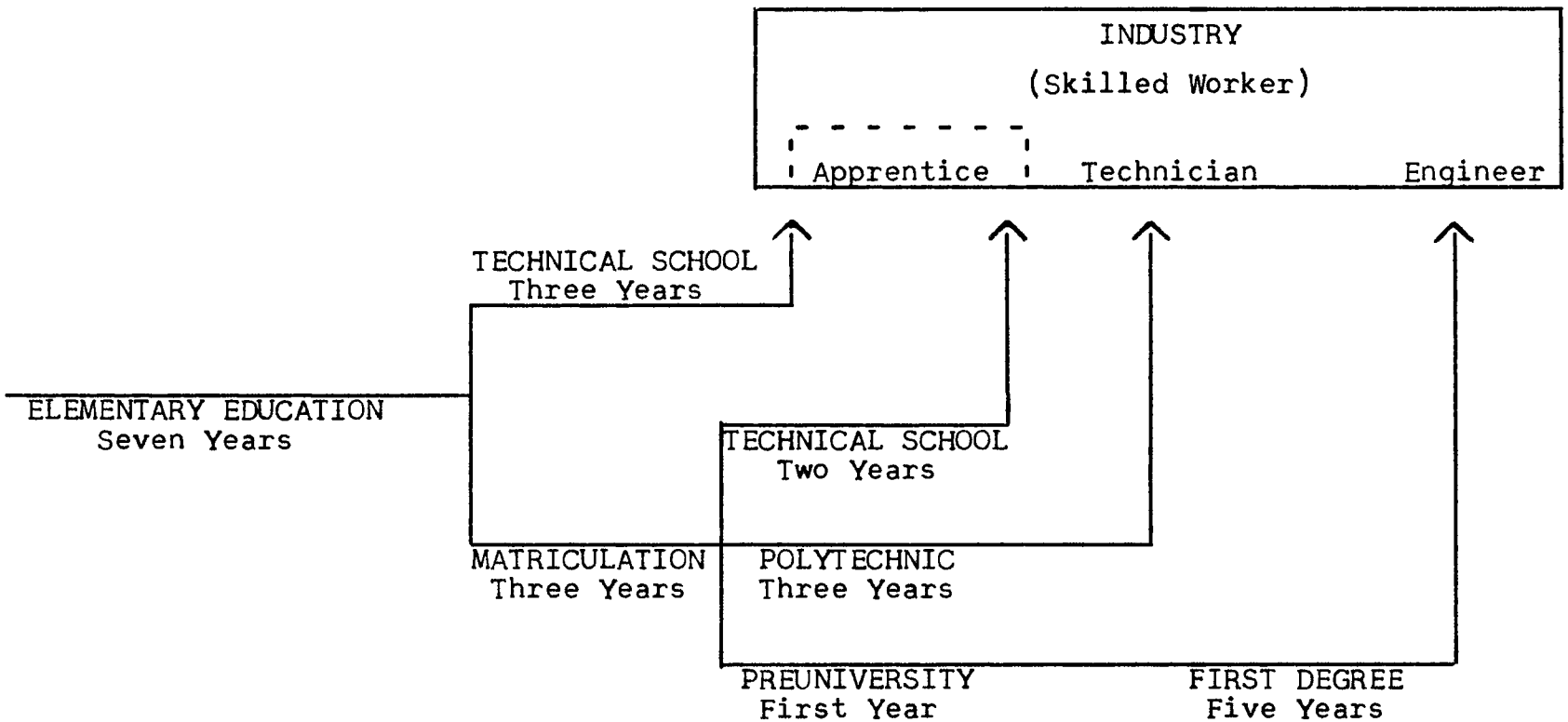

*Chart is taken from L. S. Chandrakant, Joint Educational Advisor, Ministry of Education, Fourth Five-Year Plan of Technical Education, A Draft Report, November 1965, p. 111.

FIGURE 1

Existing technical schools in India prepare students to enter into engineering programs only. In a typical curriculum, students have to take mechanical, electrical, and/or civil engineering theory.[12] The highest type of technical education in India is found in the engineering colleges, technological institutes, and universities.[13]

The polytechnic institutions in India conduct diploma courses mainly in civil, electrical and mechanical engineering.[14] The main difference between polytechnic schools, institutes, and engineering colleges is in the level of difficulty of the courses, not in the application of knowledge. Courses in polytechnic institutions lead students to diploma or associate degrees, and the courses in engineering schools lead students to a bachelor's degree in engineering.[15]

In 1960, the All India Council for Technical Education recommended that the first degree courses in engineering and technology be reorganized on a five-year pattern. This recommendation was the result of the reorganization of

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[12]L. S. Chandrakant, Technical Education in India Today, Ministry of Scientific Research and Cultural Affairs, Government of India, January 1963, p. 10.

[13]Ibid., pp. 27-28.

[14]L. S. Chandrakant, loc. cit.

[15]H. E. McCallick, W. H. Willson, "Final Report September 30, 1965," Summer Institute Program for Polytechnic Faculties, India, 1965, pp. 1-2.

secondary education in India.[16] It has been accepted by most of the universities and many of the technical institutions in India. Prior to this the first degree courses in engineering and technology required four years.

There are several well established engineering colleges in the country that have a long record of useful service in the course of technical education. These colleges are also active centers of post-graduate engineering education and research though on a limited scale as compared to the institutes of technology.[17]

Bachelor of Engineering. Bachelor of Engineering and Bachelor of Technology degrees are awarded by engineering colleges and require five years of study beyond the preuniversity or high secondary level. For admission to an engineering college, the student has to pass a higher secondary examination with science, technical subjects, or its equivalent.[18]

Bachelor of Science. The Bachelor of Science degree is awarded by a science college or university. To gain admittance

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[16]"All India Council for Technical Education," Model Syllabus Five Year Integrated Course for First Degree or Equivalent Award in Civil, Electrical and Mechanical Engineering, Ministry of Scientific Research and Cultural Affairs, p. i.

[17]L. S. Chandrakant, Joint Educational Adviser, Ministry of Education, Fourth Five-Year Plan of Technical Education, A Draft Report, New Delhi, November, 1963, p. 68.

[18]World Survey of Education, India, 1966, p. 608.

to a college or university a student must have a secondary school certificate (SSC) and pass a college entrance test.

Furthermore, the student is required to pass two other examinations: the intermediate science examination after two years, and an examination for the degree of Bachelor of Science after another two years. The student graduates with a Bachelor of Science degree after completing the four-year course.[19]

Diploma in Engineering. Diplomas in civil, mechanical, electrical, communication engineering, and metallurgy are awarded mainly at polytechnic institutions which are usually non-affiliated institutions or at the Government Technical Institutes. Students are admitted in this course after an S.S.C. examination and are passed with English, physics, chemistry and mathematics or its equivalent. These students graduate with a diploma in engineering after completing three years.[20]

The main drawback in polytechnic diploma courses in India is that the courses are in the broad fields of civil, mechanical and electrical engineering. These courses are not geared to specialization in any field of professional

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[19]Handbook of Gujarat University, "Degree of the Bachelor of Science," (B.Sc) p. 473.

[20]"Diploma Courses in Civil, Mechanical, Electrical, and Electrical Communication Engineering and Metallurgy," Board of Technical Examinations, Maharshtra State.

engineering work or in industry.[21]

Associate Membership Certificate. This is a special professional certificate awarded by the Institute of Engineers in India. A person is eligible if he is at least eighteen years of age and has practical experience in the engineering field. He can be qualified as a pupil, apprentice or assistant under a corporate member of the institution or if he is being trained in a recognized engineering institution, or is obtaining training and experience in a manner approved by the council.

Certificate of Graduateship. A person holding a diploma in engineering may, after practical experience, take the state examination which is conducted by the Institute of Engineers (India). Upon passing the state examination, a certificate of graduateship is issued. This certificate is important professionally and has value in the engineering field, but it does not improve the position of the holder as far as university standing is concerned.[22]

Technologist. A technologist is a person who holds a degree such as a Bachelor of Engineering or a Bachelor of

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[21]L. S. Chandrakant, Joint Educational Adviser, Ministry of Education, "Fourth Five-Year Plan of Technical Education," A Draft Report, (New Delhi) November 1965, p. 78.

[22]"The Institution of Engineers (India)," Rules and Syllabuses of Studentship and Associate Membership Examinations, S. Gokhale Road, Culcutra 20, November 1962, pp. 1, 3.

Science. As a technologist, his main responsibility is to apply scientific knowledge and method in the industrial field.

Technician. A technician is a person who holds a diploma in civil, mechanical, electrical or industrial areas. He is qualified from technical or polytechnic schools. He has practical training to work under the general direction of a technologist.

Craftsman. A craftsman is a skilled person or an apprentice in a trade. He applies his skill on the "shop floor".[23]

Polytechnic Graduate. A polytechnic graduate, called an engineering technician, differs from an engineer, a science graduate or a craftsman in knowledge and skill. The engineers and scientists are highly academically oriented. They use their knowledge in high level design and research. Their job is to guide the technicians. A polytechnic graduate is a highly specialized technician who uses technical skills in support of engineering activities. He serves in industry in the field of applications.[24] His usual activities are sales, design, estimating, supervising, training and installing. He

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[23]L. S. Chandrakant, Technical Education in India Today, Ministry of Scientific Research and Cultural Affairs, Government of India, January 1963, p. 8.

[24]McCallick and Willson, op. cit., pp. 1-2.

works with engineers and architects or as a factory representative.[25]

III. PURPOSE OF THE STUDY

One of the requirements for the success of a change program of this type lies in the recruitment of participants who would benefit most from the institute program as indicated by increased effectiveness in their own teaching and their ability to influence fellow teachers to change. Deshpande suggested that previous training, experience, capabilities, maturity, and subject matter background of the participants be considered in selections for this kind of summer institute program.[26]

Actually, the basic criteria established for the selection of the participants in the 1964, 1965, and 1966 polytechnic institute program were that participants should have a B.S. degree in engineering, two years of teaching experience in a polytechnic school, and an interest toward making a career in the field of polytechnic education.[27] But the

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[25]William H. Willson, "A Summary Report on the Summer Polytechnic Program at Central Polytechnic Chandigarh, Punjab," Final Report, Summer Institute for Polytechnic Faculties, College of Technology, University of Houston, 1964, p. 5.

[26]R. D. Deshpande, "The Role of University Grant Commission in the Summer Science Institute," Participant Journal, Indian American Technical Cooperation Program, July 1966, p. 15.

[27]Summer Schools 1966 for Polytechnic Teachers, Association of Principal of Technical Institutes, June 1966, p. 3.

evidence indicates that these criteria were not strictly adhered to in all programs.[28]

Nady, Chief Engineering Advisor for USAID Polytechnic Programs in India, indicates in his summary of 1966 that there was a variation of experience backgrounds and educational qualifications of participants. He reported that the distribution of participants in the 1966 institute by teaching experience was closely related to their professional degree and teaching status. Fifty-two per cent of the group were lecturers. Bachelor degree holders amounted to fifty-five per cent. Nady observed that these percenteages were far greater than the corresponding percentages in the total faculty of polytechnic institutes in India. Almost thirty per cent of the participants had five to ten years of teaching experience. By inference, sixty per cent of the participants varied in teaching experience from less than five and from more than eleven years. The report emphasized that the younger, less experienced teacher should be selected particularly in the light of the sequential program proposed from 1967 forward.[29]

The summer polytechnic institute report of 1964 also indicated that participants with different educational

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[28]Phillips H. Hanney, Technical Advisor, Delhi, to the writer, November 18, 1966.

[29]R. M. Nady, "Report on Summary of Indian Coordinators," Reports 1966 Polytechnic Teachers Summer Institutes, November 1966, pp. 2-3.

backgrounds and experiences affected the success of the program.

> ...Ten to fifteen per cent of the participants had an unsatisfactory scientific or technical background. Approximately the same percentage had bachelor or master degrees. These two groups were at the opposite ends of the science background distribution curve. This unbalance, although not serious, could be corrected by planning well in advance the program to be offered and the selection of the institution which would host the program. Applicants for admission could be more closely screened, and well balanced, accelerated curriculum could be finalized.[30]

Willson further observed and reported that a careful selection of participants would encourage better balance in the educational background. However, he pointed out that this does not signify that all participants should be highly qualified. But he suggested that they should have equal experience, educational background, and must be polytechnic oriented.[31]

The 1965 final report adds further support to these opinions. The report especially indicates that polytechnic institutes should employ a faculty which accepts the goals of the institution.

> ...Summer programs should be assigned to institutes that employ a faculty that is technically oriented. Polytechnics that are

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[30]William H. Willson, "A Summary Report on the Summer Polytechnic Program at Central Polytechnic Chandigarh, Puhjab," Summer Polytechnic Report, 1964, p. 5.

[31]William H. Willson, "A Summary Report on the Summer Polytechnic Program in Mechanical Engineering Technology," Summer Polytechnic Report, 1964, p. 1.

> integrated with engineering schools offering degree programs or technical institutes offering trade level courses tend to dampen the morale of the participant.[32]

Fowler emphasized the fact that there were seven diploma holders and twelve degree holders at the center in Ahemedabad. Participants' teaching assignments ranged through several areas such as applied mechanics, hydraulics, and economics; therefore the backgrounds of participants varied widely. Fowler also observed that due to variation of background participants responded with varying degrees of enthusiasm to the subject matter. He suggested that:

> ...Participants should be more carefully screened to assure that everyone has the background to participate in the program.[33]

Evidence from the reports of American professors indicates that participants with different educational backgrounds and experiences affected the success of the program. For instance, some participants were well grounded in theory but lacked the necessary skills and experience to function effectively in a laboratory setting. Indications are that inadequacy of technical background, unfamiliarity with laboratory methods, and involuntary selection of the participants

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[32]H. E. McCallick and W. H. Willson, "Final Report, September 30, 1965," Summer Institute Programs for Polytechnic Faculty--India, 1965, pp. 7-8.

[33]Edgar T. Fowler, "Final Report Civil Engineering Technology, L. D. College of Engineering, Ahemedabad, Gujarat," USAID Summer Science Institute for Polytechnic Faculties, India 1966, pp. 2-3.

add further difficulty in achieving the objectives of the program. Thus, there seems to be a need to establish criteria by which applicants for the polytechnic institute program can be screened.

IV. STATEMENT OF THE PROBLEM

An attempt will be made in this study to identify criteria for the selection of Indian participants to attend future polytechnic summer institutes. Due to cultural, institutional, and distance factors between U.S.A. and India, identification will be confined to only one of several sources of criteria. This source will be the opinions of those American professors who have taught in the polytechnic summer institute program in India.

V. OUTLINE OF THE PROCEDURE FOR THE STUDY

The tentative criteria were established for the selection of participants in the polytechnic summer institute program by analyzing the individual reports of American professors who had taught in the institutes in India.

An investigation was made to find out if any other points which might be helpful in the selection of effective participants had been omitted. An examination was made of the literature related to the problem establishing criteria for selection of participants for all types of summer institutes,

studies of teacher characteristics were reviewed, and the role of teachers as change agents was examined.

In an attempt to adjust for variations in education and experience among the American professors whose opinions were sought, a personal inventory was devised. In addition, a checklist was attached to the inventory in order to identify the characteristics of an ideal American student as viewed by each of the American professors. This information was needed to evaluate responses made by American professors about their institute students who were from a sharply contrasting culture. (See Appendix A)

The American professors questioned in this study were selected because of their participation experience in one or more of the 1964, 1965 or 1966 polytechnic institute programs. They were widely dispersed geographically, and they represented many different kinds of educational institutions.

A pilot study to test the instrument was made using University of Houston professors who had worked in the Indian institutes. Each was asked to respond to the items on the questionnaire and to make suggestions for improvement.

The instrument in its final form was sent to every American professor who had taught in the polytechnic summer institutes in India. Their responses were analyzed by computer to identify the criteria which were most pertinent to selection of institute participants.

VI. SCOPE AND LIMITATION OF THE STUDY

The importance of this study has been established from reports submitted by American professors following the eight-week polytechnic institutes in 1964, 1965 and 1966. Identification of criteria for selection of participants for future institutes was limited to one source. Only American professors who had been to India to teach in the polytechnic summer institutes were surveyed. Other sources, such as the participants, results of previous institutes, reports from related institutes, and opinion of the experts were excluded due to unavailability of data because of the distance factor between the U.S.A. and India. Since the polytechnic summer institute program commenced only in the summer of 1964 in India, limited statistical evidence was available for the selection of participants.

As this study was done in the United States, it was impossible for the writer to interview the polytechnic principals. Their viewpoints and opinions about the participants and the program as a whole would have added another dimension to the study.

The literature is limited regarding any kind of selection of participants for institute programs in India as well as in the United States. This is rather surprising in view of the large number of summer institutes operated in America.

Finally, there was a limitation on available resources pertaining to the Indian technical system. Information was scarce because India has limited technological and scientific manpower and resources for optimum achievement in the field of educational development and economic progress.

VII. IMPORTANCE OF THIS STUDY

This study is important for several reasons. One reason is the Indian Summer Institutes activity represents a new approach to technical assistance in the process of transferring technical and scientific knowledge and methodology from one culture to another. The entire approach to technical assistance in India and other countries will require careful selection of participants if the future programs are not to become prototyped.

A second point is that no research could be located which analyzed the criteria of selection related to participants in the polytechnic summer program.

A third reason this study is important is that the Summer Science Institute program is developing rapidly; consequently, it is important to establish objective selection criteria to assure the future success of the institute program. This study is an initial step in that direction.

Fourth, the interflow of technical and scientific knowledge among nations and particularly the intraflow of this

knowledge in underdeveloped nations is required in a world being rapidly changed by forces related to population growth, expectations of huge masses of people, and technological advances.

Participants are one of the important components of any inservice program. A carefully selected participant will generate technical know-how and exchange ideas rapidly in a fast moving technological field. It is important that the combined effort of the United States and India in furthering technical knowledge will cement the good relationship between the two countries.

VIII. POSSIBLE USES OF THIS STUDY

The established criteria could be applicable to other Asian countries even though this study was limited to the selection of Indian participants. For example, the established criteria might be applicable in a country such as Pakistan. No study has been done regarding selection of the participants for a Summer Science Institute or a Polytechnic Institute; so the criteria identified by this study will be helpful to others who wish to further refine them.

This study will give future guidance to APTI to make use of additional techniques other than written applications for the selection of the participants in the future polytechnic institute program. Heretofore, the APTI has used only the

written application procedure.

It is hoped that this study will be used to analyze in detail the characteristic of the participants to be sought according to the Indian coordinators' point of view for the future polytechnic program. It is also hoped that the established criteria will be used experimentally by the APTI.

IX. SUMMARY

In Chapter II a brief review of literature related to selection of participants is presented. Chpater III describes the methods and materials used in this study. Chapter IV presents the data for the identification of the established criteria. And Chapter V discusses the findings of the study and draws conclusions.

This is a study to identify criteria for the selection of the future participants for the polytechnic institute program in India. Its importance has been identified by American professors who have worked in the program in India and who provide the only source of data used in this investigation to establish criteria.

CHAPTER II

REVIEW OF LITERATURE AND RELATED RESEARCH

I. INTRODUCTION

This chapter will present the relevant findings of others in the selection of personnel regarding teachers and their characteristics which are related to success in teaching. This chapter will also focus on the methods used to determine criteria for the selection of participants for specific purposes. An attempt will be made to identify the variables others have found in their efforts to establish criteria for selecting personnel.

II. SELECTING PERSONNEL--AN OVERVIEW

The Problem of Establishing Criteria for Institute Participants

The primary goal of this study is to identify those qualities most needed by Indian teachers to insure the success of the polytechnic summer institute program. There are numerous problems in establishing criteria for selecting institute participants and in predicting future success of change programs of this type. These problems arise from the wide variation in experience and education among Indian polytechnic teachers, from intra- and inter-cultural understanding and motivation, and from the limitations associated with the use

of rating scales.

The major problem of establishing criteria for institute participants is due to the variety of educational backgrounds and experience of Indian teachers. This has been indicated in the 1964, 1965, and 1966 reports.[1,2,3] Further, this problem becomes more complex when an attempt is made to relate these tentative criteria to the objectives of the program and, eventually, to selection of participants for future institutes.

Goldine C. Gleser suggests that it will be beneficial to a program to obtain groups of individuals whose average probability of success is higher than that of other typical applicants.[4] Further, J. Lee Cronbach and Gleser indicate that it will be helpful to the studies if they are selected and best fitted for the type of instruction in the program, have the greatest probability of success, and contribute the most.[5] Therefore, an institute participant should have a higher probability of success than other applicants. This is

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[1]Polytechnic Summer Institute Reports, College of Technology, University of Houston, 1964.

[2]Polytechnic Summer Institute Reports, College of Technology, University of Houston, 1965.

[3]Polytechnic Summer Institute Reports, College of Technology, University of Houston, 1966.

[4]Goldine C. Gleser, "Prediction," Encyclopedia of Educational Research, (Edited by Chester W. Harris, 3rd Edition), 1960, p. 1039.

[5]J. Lee Cronbach and C. Goldine Gleser, Psychological Tests and Personal Decisions, University of Illinois, 1957, p. 165.

significant because to be successful participants should be best fitted and contribute most to the realization of program goals.

There is a problem of screening participants from widely diverse backgrounds. It is difficult to decide who will succeed in the type of program offered by the summer institutes. For instance, participants with a diploma or degree may be successful academically or theoretically yet fail in laboratory activities requiring technical skills.

In addition, there is the difficulty of assigning individuals from a group of approved applicants to a specific course of instruction in the polytechnic summer institute. This factor is related to classification among the approved personnel rather than to selection of applicants.

Charles I. Mosier suggests that the person responsible for the selection of applicants is faced with complex aspects of behavior and that it is advisable to combine a variety of predictors. Mosier also indicated that criteria should be selected in such a way that it should overlap as little as possible with regard to information. The criteria should try to explore a wide range of aptitude, skills and personality traits pertaining to the successful performance and the prediction of behavior.[6]

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[6]Charles I. Mosier, "Batteries and Profiles," Educational Measurement, LINNII Quist, L.F. (Ed.), 1951, pp. 764-808.

Oscar K. Buros indicated that there are many types of data and tests available for predicting success. School marks, other records of performance, and inventories of past experience have been found useful in colleges, industry, and for in-service training programs. Further, Buros specified many tests that have been designed to determine verbal skill, numerical facility, memory, reasoning ability, spatial and perceptual abilities, psychomotor abilities, and mechanical comprehension.[7,8,9]

The problem is in locating a test that can be used with confidence in predicting the success of institute participants. Objective tests are not widely used in India. Further, different types of schools and industry demand quite different kinds of performance in their working situations. This creates an additional problem when establishing criteria for selecting participants for a polytechnic institute.

Gleser indicated that even though it is not possible to adopt a prediction formula from others without further verification in the type of situation, it is advisable to make use

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[7]Oscar K. Buros, "The 1940 Mental Measurement Yearbook," Mental Measurements Yearbook, 1941, p. 674.

[8]Oscar K. Buros, The Third Mental Measurement Yearbook, Rutgers University, 1949, p. 1048.

[9]Oscar K. Buros, The Fourth Mental Measurement Yearbook, Gryphm, 1953, p. 1164.

of their experience.[10] Since the polytechnic summer institutes function in a cultural setting distinctly different from the one represented by Gleser and others, it is necessary to verify the success of past participants, to attribute success to specific qualifications, and to apply the knowledge gained to the selection of future participants.

The situation in the polytechnic summer institutes is cross-cultural; therefore a different type of formula for establishing criteria is needed. The only valid basis for prediction about the participants is experimental first-hand verification of the relationship between potential candidates and the actual performance of a group of subjects. However, due to cultural, institutional, and distance factors the criteria identified in this study were confined to only one of several possible sources, e.g. to the opinions of American professors who had taught in India. A more valid set of criteria would be identified if other sources of data had been available; for instance, the performance of Indian teachers after attending the summer institute, curricular changes in polytechnic institutes, changes in students, and opinions of Indian educators.

There is also a problem of obtaining a sound rating of institute participants. Robert L. Thorndike and Elizabeth

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[10]Goldine C. Gleser, op. cit., p. 1039.

Hagen indicated two problems in obtaining valid rating data--the willingness and ability of the rater to assess conscientiously and honestly.[11] Even if one tries to avoid subjective impressions and superficial reactions by introducing a procedure such as a rating scale, the willingness and ability of the rater to assess will affect accuracy.

The problem is further complicated in this study because the respondents are remote, geographically and culturally from the person rated. In most cases, the respondents have had only eight weeks experience in India or in any foreign country.

In addition, their own experience in the program affects their evaluation. For instance, if the respondent had pleasant experiences in the summer institute with Indians, he may respond differently from the respondents who had an unpleasant experience. These factors affect the rating indirectly and they create the problem of establishing criteria for institute participants. Even if the respondents are well motivated and do their best to judge accurately, their own lack of extended time to observe the situation in polytechnic summer institutes and their inexperience with cross-cultural currents create problems when criteria for selection are sought. Thorndike and Hagen indicated that sometimes lack of opportunity to observe,

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[11]Robert L. Thorndike and Elizabeth Hagen, Measurement and Evaluation in Psychology and Education, Second Edition, (John Wiley & Sons, Inc., 1961), p. 355.

the changing nature of the attributes, ambiguity of the quality to observe, lack of uniform standard of reference, and specific bias of the raters affect rating.[12] They also suggested that one should be given enough opportunity to observe the situation to verify the given traits if meaningful ratings are to be made.[13] Since the situation in polytechnic institutes is cross-cultural, raters might not have had enough chance to observe the specific traits of Indian participants. Respondents in different roles might have observed different traits of Indian participants.

It was also indicated by Thorndike and Hagen that social aspects of behavior have their meaning and definition in relation to the person and the situation.[14] The terms "personality" and "leadership quality" are examples. American respondents are asked to use these terms as they understand them when rating Indian participants. Even if there is some kind of uniformity in the meaning of these terms a great deal of variability would occur in interpretation even within one's own cultural setting. These terms are highly subjective which adds to the problem of establishing valid criteria for selecting Indian teachers to attend an institute run by American teachers in India.

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[12] Ibid., p. 357.

[13] Ibid., p. 358.

[14] Ibid.

Current Thinking About Methods That Can Be Used To Establish Criteria

In recent years several methods have been used to establish criteria in schools, colleges, industry, and training programs. For instance, rating, observation, performance, interviewing, questionnaires and tests have been employed. The major reason for establishing criteria is to identify a certain type of behavior that is related to expected performance. To do this it is necessary to devise an appropriate test as an index, administer it, and make decisions accordingly.

Since behavior is complex it is difficult to forecast adequately with a single predictor. Different schools and industries may demand different types of performances in courses and jobs that demand different approaches.

Webb and others indicate that industrial psychologists have been concerned with multiple methods and the criterion problem. They indicate that there is rarely any difference between rating versus observation versus performance versus interviewing versus questionnaires and versus tests.[15] The reason may be that there is no singular statement on "Criteria of Criteria".[16]

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[15]Eugene J. Webb and others, Unobstrusive Measures: Nonreactive Research in the Social Science (Rand McNally & Company, 1966), pp. 98-99.

[16]R. L. Thorndike, Personnel Selection (New York: Wiley & Sons, 1949).

Whisler and Harper indicated the difficulties with examining private records. They indicate that situations vary from one place to another; therefore it is difficult to compare the private records to the situation.[17] Many psychologists in industrial fields attempt to transform the amount and quality of performance output into objective measures. But supervisors and foremen rate performance subjectively. As a result of this conflict, many specialists concentrate on observable behavioral measures.[18] It indicates that rating remains the behavioral measure preferred to other methods.

Gleser indicated that it is advisable to combine a variety of predictions when the decision maker is faced with the complex aspects of behavior. He also suggested that wide coverage of aptitude, skills, and personality is necessary.[19] This requires a multiple-method approach to the criterion problem. Ghiselli and Brown gave an example of rating a streetcar motorman using a series of proficiency measures.[20] A problem arose when the multidimensional criteria had to be

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[17]T. L. Whilser and S. F. Harper, Performance Appraisal: Research and Practice (New York: Holt, Rinehart & Winston, 1962).

[18]Webb and others, op. cit., p. 99.

[19]Goldine C. Gleser, "Prediction," Encyclopedia of Educational Research, (Edited by Chester W. Harris) (New York: The Macmillan Company, 1960) p. 1046.

[20]E. E. Ghiselli and C. W. Brown, Personnel and Industrial Psychology, (Second Edition, New York: McGraw Hill Company, 1955).

expressed in a simple prediction criteria. Teachers encounter the same problem when assigning letter grades. The combined variables can be misleading if some kind of minimum standard has not been met on each task demanded by the job.[21]

Thorndike gave another viewpoint regarding multiple-method. He stated that the multiple-method approach is the best hedge against error.[22] In many situations, researchers administer questionnaires and interviews to subjects to establish criteria. This is an appropriate way to combine research methods. However, there is a problem with validity associated with the accuracy of the trait definition contributed by the initial record.[23]

Buros indicated that there are tests available that can be used to predict success in schools, in colleges, and in training programs.[24,25,26] The problem is to select tests appropriate to the situation. This requires knowledge about psychology, tests and test items, and the performance that one is attempting to predict.

However, in some situations tests are not applicable.

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[21]Webb and others, op. cit., p. 100.

[22]R. L. Thorndike, Personnel Selection (New York: Wiley & Sons, 1947).

[23]Webb and others, op. cit., p. 103.

[24]Oscar K. Buros, op. cit., p. 674.

[25]Ibid., p. 1048.

[26]Ibid., p. 1164.

For example, in military operations forces there is little experience available; therefore "job" analysis is the only suitable method for choosing and developing instruments.[27]

There seems to be no one method or combination of methods suitable to solving the criteria problem unless the researcher can establish relations between variables and performance. Only then can acceptable criteria be developed.

Criteria for Selection of Teachers

Numerous studies have been done to identify criteria for the selection of teachers. None of these studies reveal definite criteria for selection. However, these studies indicate a number of variables that can be used as indicators of criteria for selecting institute participants.

In her nationwide survey, Stout identified five important criteria for the selection of teachers: emotional stability, moral and ethical fitness, general intelligence, demonstrated ability to work with children, and professional interest and motivation.[28]

Barr, in his summary of investigations, identified the qualities which are essential to success in teaching. He

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[27]Gleser, op. cit., p. 1040.

[28]Ruth A. Stout, "A Study of Admission and Retention Practices in College and University Programs of Teacher Education" (Unpublished doctoral dissertation, Minneapolis, University of Minnesota, 1957).

stated five qualities: intelligence, scholarship, skill in expression, judgment, and adaptability. But the factors which influence judgment in selection are academic qualification, professional information, age, and sex; while the factors that influence teaching are professional preparation and experience.[29]

In selection of teachers, Ryans emphasized teachers' qualities by pointing out the amount and kind of education, length and quality of experience, personal and professional qualifications, and intellectual and cultural background.[30]

Chichestor discussed the factors which enter into teaching, such as sociability, intelligence, professional preparation, judgment, conscientiousness, physical traits, and drive. He mentioned that in selection of teachers more than just one factor is important. For instance, in teaching, knowledge of the subject matter as well as experience in teaching are equally important.[31]

In the selection procedure one has to appraise application in terms of the factors that have higher predictive value when related to the objectives of the program to be served.

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[29]A. S. Barr, "The Measurement and Prediction of Teaching Efficiency: A Summary of Investigation," Journal of Experimental Education, 1948, 16:203-283.

[30]David G. Ryans, "Local Selection Placement and Administrative Relations," Review of Educational Research, 1949, 10:210-218.

[31]Bernard J. Chichestor, "Factors in Teacher Selection," Phi Delta Kappan, March 1956, pp. 245-247.

Barr pointed out that many administrators ask questions regarding applicants in terms of teachers' characteristics, such as sympathetic, encouraging, capable of pupil management, cooperative, cheerfulness, industrious, loyal, constructive, desirable, and recognize individual needs, interests and capabilities in assignment of work.[32] Chichestor pointed out the fact that professional attributes, ability to maintain good human relations, ability to instruct, and general interest in children are important in teaching. The problem is that one part may be functioning better than the others when all characteristics are needed for complete operation in teaching.[33] Thus, the problem of measuring traits such as personality, becomes significant.

Kropp's study indicated that the factors which influence individuals to choose education as a career are teacher, parents, evaluation of teaching, courses, experience with children, and others such as security, social service, prestige, salary and working hours.[34]

Ernest pointed out an important point about teachers in industrial and business education. He stated that in industrial education one needs to have muscular or mechanical

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[32]A. S. Barr, op. cit.

[33]Chichestor, loc. cit.

[34]Russell P. Kropp and S. T. Lassinger, "Focal Points for Teacher Recruitment," Phi Delta Kappan, 1964, 35:275-277.

skill, ability to recall facts, and ability to understand abstract symbolisms in a dynamic interaction situation.[35]

Benson focuses on employment practices and the criteria which are used for the selection of teachers in elementary and secondary schools. He indicated that most selections were based on age, physical fitness, poise and appearance, and mental ability as demonstrated by college transcripts or test scores; and some schools selected teachers on the basis of certification, interest in children, breadth of preparation, and high scholarship.[36] A careful survey of literature revealed four variables in common use as criteria in teacher effectiveness: (1) teacher personality attributes, (2) teacher knowledge and achievement, (3) characteristics of teachers in professional preparation, and (4) inservice teacher characteristics.[37]

There are a number of classifications within these four variables to be considered when measuring the traits and establishing criteria for polytechnic summer institute participants. For example, in personality attributes of the teacher,

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[35]Anderson W. Ernest, "Industry and Business Use In-Service Education," Education Leadership, March 1960, pp. 361-7.

[36]Arthur L. Benson, "Employment Practices on Elementary and Secondary Schools," Review of Educational Research, 1952, 22:186-192.

[37]A. S. Barr, "The Criterion of Teacher Effectiveness," Journal of Experimental Education (September 1961), 30:21.

consideration is indicated for such traits as emotional stability, moral and ethical fitness, speech, judgment, adaptability, sociability, consciousness, physical traits, drive, cooperativeness, cheerfulness, industriousness, loyalty, constructiveness, desirability, and recognition of individual needs.[38,39,40,41] In knowledge and achievement of the teacher consideration is given to intelligence, demonstrated ability to work with children professional interest, motivation, scholarship, professional information, amount and kind of education, and length and quality of experience.[42,43,44]

Kropp suggested that in the recruitment of teachers one has to consider a more adequate listing of the qualities which are essential for successful teaching and that these qualities should be accurately defined according to the teaching field. He also suggested that there is a need to develop adequate criteria for judging teaching efficiency.[45]

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[38]Ruth A. Stout, loc. cit.

[39]A. S. Barr, "The Measurement and Prediction of Teaching Efficiency."

[40]Bernard J. Chichestor, loc. cit.

[41]A. S. Barr, "The Criterion of Teacher Effectiveness," 30:21.

[42]Ruth A. Stout, loc. cit.

[43]A. S. Barr, loc. cit.

[44]David G. Ryans, loc. cit.

[45]Russell P. Kropp, loc. cit.

The significance of the research reported here is that there is no single statement on "criteria of criteria".[46] Further, the research indicates that there is a problem of establishing objective criteria for selecting participants. The problem of measuring personality traits and characteristics of teachers has attracted the intellectual efforts of several investigators.

An individual's personality plays an important part in teaching and his success in dealing with and developing potentials, attitudes, and personality of youngsters, but these important elements are as yet unmeasurable by objective devices.[47] Hence, Miller has pointed out that when appraising teaching, personality qualities must be subjective.[48] This demands the placing of confidence in the judgment of those individuals who are responsible for the preparation of good teachers.

There has always been a concern with the personal qualities of teachers, and recently this concern became the basis for research. Allport indicates that personality may be

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[46]R. L. Thorndike, Personnel Selection (New York: Wiley & Sons, 1949).

[47]J. W. Getzel and P. W. Jackson, "The Teacher Personality and Characteristics," Handbook of Research on Teaching (Rand McNally and Company, 1963), Chapter II.

[48]Lebern N. Miller, "Evaluating Teacher Personality Before Student Teaching Begins," Journal of Education Research (March 1963), Lvi:382.

defined in terms of (1) how the individual is viewed by society, (2) what the individual does as a worker, or (3) why the individual behaves as he does.[49] Thus, the term "personality" has a broad meaning and can be interpreted in different ways. It includes traits such as physical appearance, attitudes, values, interests, favored activities, adjustment, judgment, consciousness, emotional stability, adaptability, moral and ethical fitness, cooperativeness, desirability, and responsiveness to individual needs.

Several studies have been made to measure these personality traits and to show how they relate to the teacher's effectiveness. An experiment was carried out at North Texas State University in the fall of 1962 to determine whether personality differences existed among individuals who chose different teaching fields. The results showed that only three of the six personality factors studied were found to be significantly different from the seven teaching fields studied. From this study Miller concludes that there is little personality difference among individuals within the different teaching fields. He further concludes, however, that there is a significant difference in the emotional stability among the several teaching groups.[50]

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[49]N. L. Gage, Handbook of Research on Teaching, a project of the American Educational Research Association (Chicago: Rand McNally & Company, 1963), Chapter II.

[50]Miller, loc. cit.

When Ryans studied two teacher education institutions in different parts of the United States, he found that student teachers possess similar personality patterns in relation to academic fields.[51]

Heil and Carlton reported an investigation seeking to find an answer to the question of what characteristics of a teacher's behavior (or personality) have a measurable effect on the development of the students he teaches. The finding suggested that the effectiveness of a teacher is more closely a function of her personality pattern than of her professional knowledge or any other criteria.[52]

There have been numerous studies concerning the relationship between attitudes measured by the MTAI and observable characeteristics. Characteristics such as sex, teaching levels, and experience were investigated by Getzel and Jackson.[53] Regretably the sample size was so small that no significance finding resulted.

Another interesting study was done by Kearney and Ricchio in relation to the attitude of the teacher toward subject matter. He stated that teachers who have pupils for

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[51]David G. Ryans, Characteristics of Teachers (Washington, D.C.: American Council of Education, 1960), p. 314.

[52]Louis M. Heil and Washburne Carlton, "Characteristics of Teachers Related to Children's Progress," The Journal of Teacher Education, December 1961, 12:401-406.

[53]J. W. Getzel and P. W. Jackson, loc. cit.

longer periods are interested more in the mental and physical health of pupils than in subject matter. He also found that the teacher of special subjects thinks more about subject matter.[54]

Ryans suggested that study of teacher characteristics will be helpful when identifying prospective teachers and as an aid for better understanding of teachers associated with conditions which would contribute to improve the procedure for selecting teachers. Regarding age and experience, he pointed out that trends with regard to extent of teaching experience are not substantially different from those noted when teachers are classified according to age. In regard to marital status, Ryans also pointed out that there are systematic differences between married and unmarried teachers with respect to various classroom behaviors and attitudes, but these differences often vary according to school level, grade and subject taught. In regard to the type of school a teacher attended, Ryans pointed out that there are very few significant differences. One interesting point is that the teacher who came from a large university attained higher scores on stimulating classroom behavior and the child-centered education viewpoint. He also reported that teachers from larger schools scored significantly higher than teachers from smaller schools on scales measuring

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[54]David G. Ryans, op. cit., p. 11.

friendly and stimulating classroom behavior, favorable attitudes toward administrators, verbal understanding, and emotional stability.[55]

Ryans suggested that the problem in the teacher selection procedures in large cities is that written and oral examinations may identify verbal and written understanding of the teachers but not other characteristics relating to personal or social qualities. Despite the critical importance of this problem many of the studies have not produced significant results and measurement of teachers' personality and characteristics.[56]

Ryans indicated that sources of information about teachers' qualities are generally from rating devices, supervisory reports and classroom observations, national teacher exams, pupil achievement records, anecdotal records of teacher achievement, and cumulative teacher records.[57] He further indicated that some of the administrators used biographical inventory blanks, oral exams, standardized interviews, and reference schedules as technics for teacher selection.[58]

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[55]David G. Ryans, Characteristics of Teachers, (Washington, D.C.: American Council on Education, 1960) p. 11.

[56]David G. Ryans, "Local Selection Placement and Administrative Relations," Review of Educational Research, 1949, 19:210-218.

[57]Ibid.

[58]Ibid.

Bobbit indicated the procedures that have been used for selecting prospective teachers at the end of the sophomore year in college. Some of these procedures are:

1. An application form filled out by the applicant
2. Five or more ratings from instructors who were well acquainted with the applicant
3. Grade point average for high school work
4. Rank in high school graduating class
5. Intelligence scores
6. Results of college aptitude test
7. Results of Iowa Reading Test
8. Grade point average of college work
9. Summary of results of examination and inventories arranged in a profile according to percentile rank.[59]

Benjamin indicated that the procedures that have been used for recruitment in big cities include:

1. Preparing and distributing of notices of vacacies, including eligibility requirement, such as qualification, experience, grade level taught, subject field, and others.
2. Preparing, distributing and receiving application forms.
3. Compiling and evaluating application data.
4. Preparing, scheduling, and administering written and practical examinations.

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[59]Blanche G. Bobbit, "Suggested Procedure for the Selection of Prospective Teachers at the End of the Sophomore Year of College," Journal of Education Research, 1948, 41:676-86.

5. Scheduling interviews with school office.[60]

Criteria for Success in Polytechnic Work

Previewing the problem of establishing criteria for institute participants, overviewing the methods for establishing criteria, and examining the criteria problem in relation to teacher selection make the identification of the valid and reliable ways to choose polytechnic teachers for future institutes in India seem difficult if not impossible. The great difference of opinion about appropriate criteria exists in an informal way among American professors who have worked in the institute program in India. Even if studies on teacher selection had progressed to the point of successful prediction in this country, they could not be applied directly in a different culture and another context.

There are some broad areas, however, that can be used to indicate possible variables related to success in polytechnic work. These broad areas may be classified as inservice teacher characteristics, characteristics of teachers in professional preparation, knowledge and skills acquired by teachers, and personality attributes of teachers.[61] Examination within these four categories indicates further classification

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[60]Novak J. Benjamin, "Recruitment and Promotion of Personnel," Phi Delta Kappan, March 1959, pp. 261-263.

[61]A. S. Barr, "The Criterion of Teacher Effectiveness," Journal of Experimental Education, September 1961, 31:21.

in each category, however, that might help to establish criteria for success in polytechnic work.

Inservice Teachers' Characteristics. The polytechnic summer institute is an eight-week inservice program in India. The special characteristic of this program is the cross-cultural situation. Secondly, this program is designed to introduce the best teaching methods and techniques for the various disciplines and also to improve subject matter competency. In addition, it is designed to improve skill, stimulate interest in subject matter fields, to promote greater understanding, to relate polytechnic education to the needs of Indian industry, and to provide discussion among institute participants for understanding and appreciation of each others' teaching problems.[62]

The criteria of success in polytechnic work should be related to the objectives and characteristics of the inservice program. First, this program is designed to develop polytechnic skills in India. Hence, the basic criteria of success is that polytechnic teachers should be selected as the institute participants. Second, the program is designed to introduce good teaching methods; therefore a criteria would be that these teachers would have experience and academic backgrounds to enable them to grasp new methods. Third, this program has a cross-cultural situation. This requires positive attitudes

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[62]Summer Schools 1966 for Polytechnic Teachers, Association of Principal of Technical Institutes, June 1966, p. 3.

of institute participants towards American professors as well as to the program. The reverse is also true.

Criteria of Teachers in Training. This criteria is related to the background of the institute participants. The polytechnic summer institute is designed not only to introduce good methods, but in addition to relate this method and skill to polytechnic education and to the needs of industry in India. Hence, one criteria for the success of polytechnic work is that the institute participants should have the training and skill needed to teach their subject matter field. In addition, they should have training and experience in polytechnic schools and industry in India so that they can relate method and skill to polytechnic education and to industry in India. In addition, the participants should have mechanical aptitude, experience in laboratory work to grasp, and be able to handle the laboratory in polytechnic work.

Teachers' Knowledge and Achievement. The characteristics included in this category are intelligence, academic qualification, professional interest, amount and kind of education, length and quality of experience, and knowledge of the subject matter.[63,64,65,66]

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[63]Ruth A. Stout, loc. cit.

[64]A. S. Barr, "The Measurement and Prediction of Teaching Efficiency."

[65]David G. Ryans, loc. cit.

[66]Bernard J. Chichestor, loc. cit.

Logically, the criteria related to qualification and subject matter background of institute participants should be that participants have minimum qualifications, such as diploma and degrees in engineering from technical schools to grasp the subject matter and methods in the polytechnic summer institute. In addition, the institute participants should have a sound background in subjects such as math and science in order to achieve success in polytechnic work.

Teachers' Personality Attributes. The characteristics included in this category are emotional stability, moral and ethical fitness, skill of expression, judgment, consciousness, physical traits, drive, cooperation, cheerfulness, industriousness, loyalty, constructiveness, desirability, and recognition of individual needs.[67,68,69,70]

These criteria are related to personality attributes of institute participants. The institute program is cross-cultural; therefore, the criteria should be that the institute participants have attributes such as cooperativeness, adjustability, and constructiveness. In addition, they should have

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[67]Ruth A. Stout, loc. cit.

[68]A. S. Barr, "The Measurement and Prediction of Teaching Efficiency: A Summary of Investigation," 16:203-283.

[69]Bernard J. Chichestor, loc. cit.

[70]A. S. Barr, loc. cit.

skill in expression in English, the desire to recognize needs of others, and a positive attitude to adopt new ideas from American professors and to the program.

It is concluded that four major variables have been found as acceptable criteria for selection of teachers. These variables are: (1) teachers' knowledge and achievement, (2) teachers' personality attributes, (3) characteristics of teachers in professional preparation, and (4) inservice teachers' characteristics. Each major variable has been further classified in a number of minor categories. For example, characteristics such as intelligence, academic qualification, professional interest, kind of education, and length and quality of experience are classified in the category of teachers' knowledge and achievement. Characteristics such as physical traits, emotional stability, judgment, consciousness, drive, adjustment, cooperativeness, and cheerfulness are classified in the category of teachers' personality attributes. Characteristics such as method and skill related to subject matter field are classified in the category of teachers' characteristics in training. Finally, the criteria of inservice teachers' characteristics are classified in relation to the objective of the program.

III. SUMMARY

By extrapolation, the literature indicates that participants should come from polytechnic teachers in India.

Their professional preparation, methodology, and skills should be related to engineering fields. The institute participant needs to know his subject matter. Teachers should have professional preparation and experience in teaching in technical institutes, engineering colleges, or polytechnic schools. Institute participants should have personality attributes such as ability to cooperate, adapt, and adjust since this program is a kind of change program. Participants should have the ability to understand abstract symbolism and the related mechanical skills in order to be successful in polytechnic work. Finally, the institute participant should have the ability to grasp new methods, be adaptable to accept new ides, and have leadership qualities necessary to solve problems and introduce new methods in their schools and in industry in India.

Chapter III will present methods and material which lead to the development of the instrument.

CHAPTER III

METHODS AND MATERIALS

I. INTRODUCTION

This chapter will present the steps which lead to the development of the instrument that was used for this study, the method by which the data was obtained, and the procedure for analyzing the data.

A review of 1964, 1965, and 1966 developmental reports of polytechnic summer institutes revealed that there was a wide variation of educational background as well as experience among the Indian participants.[1,2,3] Although an attempt was made to select participants with similar qualifications, those selected were not sufficiently homogeneous to satisfy American professors.

Criteria were established in the 1964, 1965, and 1966 programs that participants should have a B.S. degree in engineering, two years of teaching experience, and have an interest

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[1]Final Report, Summer Institutes for Polytechnic Faculties, India, 1964, College of Technology, University of Houston, 1964.

[2]Final Report, Summer Institutes for Polytechnic Faculties, India, 1965, College of Technology, University of Houston, 1965.

[3]Final Report, Summer Institutes for Polytechnic Faculties, India, 1966, College of Technology, University of Houston, 1966.

in making a career in teaching.[4] But this has not been strictly adhered to in any of the polytechnic institute programs.[5] A recent report from Nady, Chief Engineering Advisor for USAID polytechnic programs in India, further supported the evidence that there was a variation of background among the participants in the 1966 program.[6]

American professors from engineering, science, and technology faculties suggested different viewpoints about the selection of Indian participants for the polytechnic institute program in India. There was a difference of opinion about educational qualifications, experience, academic background, age and professional status for the selection of participants to attend summer institute programs.[7,8,9,10] A review of the literature[11,12,13] failed to uncover an instrument applicable

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[4]Summer Schools 1966 for Polytechnic Teachers, Association of Principal of Technical Institute, June 1966, p. 3.

[5]Phillip H. Haney, Technical Advisor, Delhi, to the writer, November 18, 1966.

[6]R. M. Nady, "Report on Summary of Indian Coordinators," Reports 1966 Polytechnic Teachers Summer Institutes, November 1966, pp. 2-3.

[7]Willson, op. cit., p. 5.

[8]Willson, op. cit., p. 1.

[9]McCallick and Willson, op. cit., pp. 7-8.

[10]Fowler, op. cit., pp. 2-3.

[11]William H. Angoff, "Measurement and Scaling," Encyclopedia of Educational Research (Third Edition), 1960, pp. 806-816.

[12]S. A. Likert, "Technique for the Measurement of Attitudes," Archives of Psychology, No. 140, Columbia University, 1932, p. 55.

[13]A. N. Oppenheim, Questionnaire Design and Attitude Measurement (New York: Basic Book Inc., Publishers, 1966).

to the problem posed by the American professors; therefore it was decided to develop the instrument.

II. THE SURVEY PLAN

The plan was made to survey American professors who participated in the 1964, 1965, or 1966 polytechnic summer institutes in India. These subjects were selected on the basis of their experience with Indian participants. Since they represented the total survey polulation, a sample was not needed.

Next, the survey instrument was devised and adapted to the purpose of this study. Due to time and distance factors, the questionnaire was directed to only one source of data--the opinion of American professors who participated in the institute program.

The final step was to organize the data so that correlations could be ascertained. Significant variables or combinations of variables revealed by this treatment would then be open for analysis.

III. PREPARATION OF THE QUESTIONNAIRE

The following procedure was employed to develop the instrument used in this study.

First, an attempt was made to compile all statements about selection of Indian participants contained in the 1964,

1965, and 1966 reports. These statements were examined and verified in the light of the experience of American professors with Indian participants. Then, those statements were related to the existing problem of establishing criteria for selecting participants to attend the polytechnic summer institutes.

Some of the statements from the reports were closely related to the personal experiences and attitudes of American professors. All the statements were examined, and the decision was made to keep those that related in any possible way to selecting participants. Special consideration was given to the wording of the items. Explanations and definitions were supplied for such terms as diploma, degree, and technician. Each item in the questionnaire was examined in relation to the other items to avoid overlapping. Statements were phrased in positive terms so that answers could be placed near the right side of the seven-point scale.

Finally, the questionnaire was reduced in length to a avoid using too much of the time of the respondents. The resulting questionnaire was longer than normal; however, it was not reduced further in size because of the special kind of respondent and the nature of the problem under investigation.

All the items were categorized in the following way: educational degrees, experience, academic background, age, professional status, and miscellaneous characteristics. Items within each category were classified according to the possible

variations. (See Appendix A)

A review of literature about selection of teaching personnel indicated that additional items should be added to include personality and leadership qualifications.

Third, one hundred twenty items were compiled from the 1964, 1965, and 1966 polytechnic reports. These were reorganized into fifty-seven statements which were selected for the instrument.

Validity of the instrument was identified in several ways. A special effort was made to select the items that were related to the problem singly and/or when taken as a whole in the instrument. Furthermore, a variety of items were chosen to include each discernible, stable variable related to selection of participants. Questions related to problems were stated clearly, and certain terms were defined. The response scale was designed to allow expression of a wide range of opinion.[14,15,16]

In regard to the scoring system, Likert developed a technique called "the method of summated ratings", in which he investigated two methods of scoring. The first method he indicates that the underlying distribution was based on normal,

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[14]Angoff, loc. cit.

[15]Likert, loc. cit.

[16]Oppenheim, loc. cit.

and the proportion of individuals choosing each alternative were converted to sigma values. In the second method the alternatives were arbitrarily coded from one to five, or from one to seven, to detect the strength of approval or disapproval with the stimulus statement.[17]

For the research instrument in this study, Likert's second method was chosen in order to detect the strength of approval and disapproval in each item of the scale. A seven-point scale was accepted instead of a five-point scale in order to provide wider variation in responses.

In spite of efforts made to insure validity and reliability, it is regretable that "at present there is no way of making sure that an attitude scale is valid."[18,19] Not only that, but "the very fact that we have fallen back on ratings usually means that no better means of quality is available to us. There is usually nothing against which we can test the ratings."[20] This is the understood weakness of the attitude scale.

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[17]William H. Angoff, "Measurement and Scoring," Encyclopedia of Educational Research, (Third Edition) 1960, p. 810.

[18]Robert L. Thorndike and Elizabeth Hagen, Measurement and Evaluation in Psychology and Education (Second Edition) (John Wiley & Sons, Inc., 1961), Chapter 13.

[19]Oppenheim, op. cit., p. 122.

[20]Thorndike and Hagen, op. cit., p. 363.

Fourth, a pilot study was conducted to test the reliability and validity of the instrument, to obtain further suggestions and improvement, and to study the pattern of response. The tentative questionnaire was administered to the on-campus professors who had participated in the 1964, 1965, or 1966 polytechnic summer institute in India. Those professors at the University of Houston were asked to respond to the questionnaire and give their suggestions for further improvement in the instrument. Special instructions were given on a cover sheet, and it was indicated that their responses would be treated confidentially.

These questionnaires were distributed on December 7, 1967, to fifteen on-campus professors at the University of Houston. Nine out of fifteen returned the instrument, and their responses and suggestions were incorporated into one questionnaire.

This composite questionnaire was then submitted to professors recognized as experts in the construction of survey instruments. The resulting instruments were then reviewed by computer experts to establish the appropriate form of response.

The main purpose of the pilot study, as mentioned before, was to check each item with the principle of the instrument and to examine the form of questionnaire, to identify the ambiguity in sentence structure and wording in each item,

to obtain suggestions for further improvement, and to study research patterns.

On the basis of the pilot study, item analysis data, and suggestions from respondents, the following changes were made in the instrument:

1. Addition of two sheets to the questionnaire
   (a) Personal Information Sheet
   (b) Preferred Student Characteristics Sheet
2. A special name, Form for Rating the Indian Participant, was given to the section related to Indian participants.
3. Word patterns were changed, the structure of the instrument was varied and the cover instruction sheet was rewritten.

Personal Information Sheet

The following information was sought about each American professor:

1. Name
2. Present address
3. Present position
4. Education
5. Experience: Teaching and Industrial
6. Experience in Polytechnic Summer Institutes in India (See Appendix A)

These items were added to identify the responses of the respondents about Indian participants in relation to personal factors.

Preferred Student Characteristics

This rating form was developed from the result of Davis' study.[21] He identified Preferred American Student Characteristics as viewed by American faculties. Seventeen selective criteria related to the objectives of polytechnic summer institutes were identified from this study.[22] A five-point rating scale was adapted for this rating form.[23,24] (See Appendix A)

This rating form was added to identify characteristics of the ideal American student as viewed by each American professor and to relate those characteristics with responses indicating attitude toward Indian participants.

Form for Rating Indian Participants

On the basis of item analysis data and suggestions from the pilot study, few changes were made in the opinion questionnaire. A special name was given to the instrument to distinguish it from data about American professors. Explanation of a few terms relating to Indian education systems and terms was given. The cover sheet was rewritten. The remainder of the instrument, time, and testing arrangement prove satisfactory.

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[21]Jarvis A. Davis, "Faculty Perception of Students," Part I, II, III, Structure of Faculty Characteristics, Research Bulletin pb-64-12; Developmental Research Division, ETS, Educational Testing Service, Princeton, New Jersey, April 1964.

[22]Ibid., Part III, p. 5.

[23]William H. Angoff, op. cit.

[24]Thorndike and Hagen, op. cit.

IV. ADMINISTRATION OF THE QUESTIONNAIRE

The instrument was mailed with stamped self-addressed envelopes on January 31, 1967, to fifty-five American professors representing the total population whose opinions were valued. Each subject was coded by number on a master list, and this number was placed on the personal inventory sheet and the Form for Rating Indian Participants. An attempt was made to secure unreturned questionnaires with a brief letter mailed after five weeks to American professors. (See Appendix B)

Forty-three professors responded to the questionnaire. This represented seventy-eight per cent of the total population. These forty-three responses were compiled, categorized and punched on two computer cards.

V. SUMMARY

The tentative criteria were established from the opinions of American professors who have been to India to attend the 1964, 1965, or 1966 polytechnic summer institute. The plan was made to survey fifty-five American professors who had been in India. The principle of Likert's scale guided the researcher to the development of the instrument; and a seven-point scale was used for scoring the instrument. A pilot study was conducted to test the validity and reliability of the instrument.

The instrument was mailed to fifty-five American

professors on January 3, 1967. A brief follow-up letter was mailed after five weeks to secure unreturned questionnaires. Forty-three professors (seventy-five per cent) responded to the questionnaire. These responses were compiled and classified into groups and placed on two data cards for computer analysis.

The presentation of data for the identification of the established criteria will be in Chapter IV and the analysis of data about preferred students characteristics and Indian participants rating will be in Chapter V.

CHAPTER IV

PRESENTATION OF DATA FOR THE IDENTIFICATION OF THE ESTABLISHED CRITERIA

I. INTRODUCTION

This chapter will present personal information about the American professors who worked in India, selected characteristics of American students which they prefer, and those characteristics they most prefer in the Indian participants. This data will be presented for analysis in the next chapter, and criteria for selection of Indian participants for future polytechnic institute program in India will be ascertained based upon the single source under consideration here.

II. PERSONAL INFORMATION SHEET

The personal data about American professors relates to their age, education, experience, professional status, and geographical location to those characteristics most preferred in Indian participants. The preferred student characteristics indicated by each professor was related to responses made on the form for rating Indian participants. The personal information sheet was divided into thirteen sections. Each section was further classified in order to use computer techniques for the analysis.

Table 1 reveals the ages of the respondents in three categories.

TABLE 1

AVERAGE AGE OF AMERICAN PROFESSORS

Category	Age Group	No.
I	33-44	20
II	45-55	17
III	55-67	6

Table 2 reveals the various positions now held by Americans who taught in the Indian institutes. The data reveals that the majority of the respondents were professors and associate professors. The minority of the respondents were deans, consultants, and department chairmen. It should be noted that a large number of the respondents indicate their current professional status.

TABLE 2

PRESENT POSITION OF THE AMERICAN PROFESSORS

Category	Position	No.
I	Dean	1
II	Consultant	1
III	Asst. Dean	3
IV	Dept. Chrm.	2
V	Professor	7
VI	Asst. Prof.	3
VII	Assoc. Prof.	8
VIII	Not Indicated	18

Table 3 reveals the types of institutions from which the respondents come. It is interesting to note that the majority of the respondents came from public institutions while very few came from private institutions.

TABLE 3

TYPE OF INSTITUTION REPRESENTED BY AMERICAN PROFESSORS

Category	Public	Private
I	38	0
II	0	5

Table 4 shows the types of colleges represented by respondents. The data reveals that respondents came from five different colleges. A majority were members of engineering and technology faculties.

TABLE 4

COLLEGES REPRESENTED BY RESPONDENTS

Category	College	No.
I	Engineering	19
II	Technology	20
III	Architecture	2
IV	Arts & Science	1
V	Education	1

Table 5 reveals the educational background of the respondents in three categories.

TABLE 5

EDUCATIONAL DEGREES OF THE PROFESSORS

Category	Degree	No.
I	B.S.	21
II	M.S.	15
III	Ph.D.	7

Table 6 shows the educational background of the respondents. A majority of the respondents had engineering background and had majored in civil, mechanical, electrical, or industrial engineering.

TABLE 6

DEGREE MAJOR OF THE RESPONDENTS

Category	Major	No.
I	Mechanical	10
II	Civil	7
III	Electrical	9
IV	Industrial	7
V	Architect	4
VI	Math	1
VII	No Answer	5

Table 7 shows the number of years of teaching experience

of the American professors. In almost every instance more than five years of experience is indicated. None of the Americans indicated any experience teaching in elementary or secondary schools.

TABLE 7

NUMBER OF YEARS OF COLLEGE TEACHING EXPERIENCE

Category	Years	No.
I	1-5	3
II	5-10	10
III	10-15	9
IV	16-21	9

Table 8 shows the number of years of industrial experience of the respondents. The data reveals that a majority had five to ten years of industrial experience. Very few had more than ten years of industrial experience in industry.

TABLE 8

NUMBER OF YEARS OF INDUSTRIAL EXPERIENCE

Category	Years	No.
I	5-10	11
II	11-16	3
III	17-22	4
IV	23-37	1

Table 9 reveals the number of times the respondent attended the summer institute program in India. Twenty-one respondents attended once, twenty respondents attended twice, and thirty-three attended three times.

TABLE 9

NUMBER OF TIMES PROFESSORS TAUGHT IN THE INSTITUTE PROGRAM

Year	Category I One Time	Category II Two Times	Category III Three Times
1964	2^{4}	$2^{4,5}$	$11^{4,5,6}$
1965	5^{5}	$10^{4,5}$	$11^{4,5,6}$
1966	$\underline{14}^{6}$	$\underline{8}^{5,6}$	$\underline{11}^{4,5,6}$
Total	21	20	33

Key: Institute Held In:

4,5,6 = 1964, 1965, 1966
5,6 = 1965, 1966
4,5 = 1964, 1965
4 = 1964
5 = 1965
6 = 1966

Table 10 shows the location of assignment of the American professors in India. It is interesting to note that five respondents returned to the same center more than once.

TABLE 10

LOCATION OF INSTITUTE AND ASSIGNMENT

OF AMERICAN RESPONDENTS

Category	Institution	Number Assigned
I	Madras[4,5,6]	10
II	Banglore[5,6]	6
III	Chandigarh[4,5,6]	11
IV	Allahabad[4,5,6]	5
V	Gauhati[6]	5
VI	Patna[6]	4
VII	Bhopal[5,6]	6
VIII	Ahmedabad[4,5,6]	9
IX	Jadarpur[4,5]	6
X	Lucknow[5]	4
XI	Dhanbal[5]	2

Key:

4,5,6 = 1964, 1965, 1966
5,6 = 1965, 1966
4,5 = 1964, 1965
4 = 1964
5 = 1965
6 = 1966

NOTE: One American professor returned to Ahmedabad three times, two returned to Jadavpur twice, two to Madras, two to Banglore, and two to Bhopal.

Table 11 reveals the subjects that the respondents taught in India. Drafting was added after the 1964 institute program.

TABLE 11

SUBJECTS AMERICAN PROFESSORS TAUGHT IN INDIA

Category	Subject	No.
I	Civil	10
II	Mechanical	15
III	Electrical	15
IV	Industrial	17
V	Drafting	4

Table 12 shows the reasons for going to India by respondents.

TABLE 12

REASONS GIVEN BY RESPONDENTS FOR GOING TO INDIA

Category	Reason	No.
I	Travel	14
II	Professional Interest	13
III	Service	5
IV	Salary, Fringe Benefits	3
V	Challenge	2
VI	Curiosity	1

Examples of reasons in each category are:

I. Travel: Trip around the world, desire to travel,

change to visit India.

II. Professional Interest: Opportunity to teach in a foreign country, exchange of knowledge with people in polytechnic education.

III. Service: Desire to help technological education in India, to make contribution to an underdeveloped country, chance to help someone in a foreign country.

IV. Salary: Summer employment, good financial reward.

V. Challenge: New, interesting challenge, the educational challenge.

Table 13 shows that the majority of the respondents would like to go again for the institute program.

TABLE 13

RESPONDENTS DESIRING TO RETURN TO INDIA

Category	Yes	No	Neutral
I	22	0	0
II	0	4	0
III	0	0	1

Table 14 reveals the most important objective of the institute program according to the respondents.

TABLE 14

MOST IMPORTANT OBJECTIVE OF THE INSTITUTE PROGRAM AS REVEALED BY AMERICAN PROFESSORS

Category	Objective	No.
I	Method	20
II	Curriculum	6
III	Education	4
IV	Goodwill	13
V	Teachers	5

Examples of objectives in each category include:

I. Methods: Lecture and laboratory work; methods of teaching; teaching technique, visual aids; methods of material presentation.

II. Curriculum: Develop new curriculum, update subject matter, update courses.

III. Education System: Change the basic philosophy of education; proper place for the polytechnic in economy of India; improve education system in India; reorient the polytechnic educational philosophy; enhance cooperation between educators and their local industries.

IV. Goodwill: Improve Indian-American relationship; teach the Indian about our way of life; provide Americans with an appreciation of Indian values; help Indian become self-sufficient.

Personal data about each respondent was placed on computer card number one.

III. PREFERRED STUDENT CHARACTERISTICS

The questionnaire used in this study contained seventeen items about student characteristics. The respondent was requested to indicate his preference on a five-point scale.

Each item in the questionnaire is so designed that it describes two opposite characteristics of the students. These items include promptness, perception, physical traits, verbal expression, written expression, application, manipulation skill, ability to accept change, curiousity, ability to make decisions, ability to work with others, motivation, persistance and personality.

Data from the personal information form, including preferred student characteristics, were placed on computer card number one.

IV. FORM FOR RATING THE INDIAN PARTICIPANT

The questionnaire used in this study contained 57 items categorized into six problem areas related to establishing criteria about institute participants. Most of the items were selected from the 1964, 1965, and 1966 polytechnic institute reports. Additional items were added to complete the full range of possible variables as ascertained from other sources

reported elsewhere in this study.

Items were arranged so that an item from each problem area appeared before a second problem from an area was introduced. For example, Items 1 to 10 related to educational degrees, Items 11 to 22 related to experience, Items 23 to 30 related to aducational background, Items 31 to 36 related to age, Items 37 to 44 related to professional status, and Items 45 to 57 related to miscellaneous factors.

Comments made by respondents have been categorized and recorded below:

Personal Comments from the Respondents:

Educational Degrees:

1. Those with Bachelor of Engineering degrees are more competent in handling laboratory work in the same institute than participants with diplomas.
2. There will be a better response and participation if the whole class are either degree holders or not.
3. Equal educational background in any given class is desirable.
4. Those who have just received diplomas or degrees should be accepted only in an emergency.
5. For diploma holders the program should have a practical bias.
6. Participants should be selected only from degree holders.

Experience:

1. Participants should be selected on the basis of past experience.
2. Equal experience in industry means different things to different people.
3. If you think a man is good enough to teach for you then his educational and experience qualifications mean nothing.
4. Industrial background is an unrealistic demand.

Academic:

1. Most training is needed for the polytechnic level.
2. Engineering educational background depends upon the discipline (civil, mechanical, electrical, industrial).
3. If he is interested in attending the summer programs then his background is unimportant.

Age:

1. Age makes no difference.
2. Old enough to appreciate instruction and young enough to push.

Professional Status:

1. Train polytechnic professors who emphasize teaching.
2. The principal can train department head if he

is not indifferent.

3. Anyone would profit from change in ways of doing things.
4. Can represent entire professional range if they volunteer.
5. Teachers should be allowed to participate.
6. Unskilled teachers need most to attend.

General:

1. Should be able to converse easily in English.
2. Should be willing to work.
3. Needs both willingness and qualification.
4. There is really only one difference between good and poor student motivation.
5. Selection should be made entirely on the basis of his interest and willingness to do the work.
6. Willingness to work is the most important question.
7. Prospective participants should understand what is to be expected of him.

In addition, one respondent sent a very interesting personal letter to the investigator expressing his interest in the program and explaining its relationship to the educational system in India.

The data obtained from respondents on this rating scale was recorded on computer card number two. Means, standard deviations, and correlations were obtained for cards one and

two prior to further analysis. Results will be described in Chapter V.

V. SUMMARY

This chapter presented data obtained from the Personal Information Sheet, including preferred student characteristics, and from the Form for Rating of the Indian Participant.

Personal information about the respondents was divided into fourteen classifications. Data in each classification were grouped into categories, and the number of responses was indicated. This information was placed on computer card number one.

The questionnaire used for preferred student characteristics contained seventeen items. The respondents were asked to rate each item on a five-point scale. This information was recorded on card number one.

The questionnaire used for rating characteristics of Indian participants contained fifty-seven items. The respondents were requested to rate each item on a seven-point scale. The data was recorded on computer card number two.

Selected data are recorded and discussed in Chapter V in Tables 1A through 14A (Preferred Student Characteristics) and Tables 1B through 14B (Indian Participant Ratings).

CHAPTER V

ANALYSIS AND INTERPRETATION OF DATA

I. INTRODUCTION

This chapter will present the analysis of data about personal information of American professors, preferred student characteristics and Indian participant ratings. The data will be presented in statistical analysis expecially in terms of mean, standard deviation, and correlation in relation to each item and in addition t-tests will be indicated. The important data will be analyzed in relation to establishing criteria for institute participants in India. However, few supplementary significant data will be discussed. Finally, discussions, implications and suggestions will be presented relating to the study.

II. ANALYSIS OF DATA

Tables 1A to 14A refer to preferred student characteristics and Tables 1B to 14B refer to Indian participant ratings.

Table 1A shows the relationship between two variables: age of the American professors and preferred student characteristics. The means of the preferred students characteristics indicate that (1) the majority of the American professors rated highly such things as verbal ability, writing ability, application of ideas, promptness, acceptance by peers, and willingness to ask questions (Items 4, 5, 6, 8, 9, and 10, respectively)

on the five-point rating scale; and (2) the younger American professors rated the same items higher on the five-point scale than did the older professors. This is illustrated by the correlation coefficient of -.370 between age and Item 9.

TABLE IA

RELATIONSHIP BETWEEN AGE OF THE AMERICAN PROFESSORS AND PREFERRED STUDENT CHARACTERISTICS*

Item No.	Mean	S.D.	Correlation	
4	4.390	.945	-.097	
5	4.415	.805	-.188	
6	4.317	.789	-.163	
8	4.415	1.024	-.183	
9	4.300	.893	-.370	T(-2.454).05
10	4.220	1.194	-.209	

*Variable 1: Mean 1.659; Standard Deviation .693
T = t-test

Table 1B shows the relationship between two variables: age of the American professors and Indian participant ratings. The mean of the Indian participant ratings indicate that the majority of the American professors rated highly (m = 4.025 and above) on the seven-point rating scale of Items 1, 2, 3, 4, 8, and 9 (diplomas good as degrees, successful in academic subjects, technicians, degree holders only, degrees are better than diplomas, engineering degree poor risk, respectively) related to education; 12, 14, 15, 16, 17, and 22 (practical

TABLE 1B

RELATIONSHIP BETWEEN AGE OF THE AMERICAN PROFESSORS AND INDIAN PARTICIPANT RATING*

Category	Item No.	Mean	S.D.	Correlation
	1	4.657	2.473	.211
	2	4.025	1.165	.144
	3	4.780	1.388	.076
	4	4.146	1.315	.166
EDUCATION	5	3.390	1.611	-.034
	6	3.537	1.398	-.167
	7	3.683	1.192	.138
	8	4.500	1.084	-.018
	9	4.683	1.171	.140
	10	3.359	1.267	-.061
	11	3.634	2.498	-.074
	12	5.325	1.774	.094
	13	3.487	1.571	.057
	14	4.205	1.559	.052
	15	4.615	1.310	-.142
EXPERIENCE	16	4.154	1.113	-.024
	17	4.077	1.222	.005
	18	2.487	1.275	.132 L
	19	2.921	1.583	.200 L
	20	3.725	1.881	-.017
	21	2.625	1.675	-.071 L
	22	5.200	1.043	-.007
	23	4.100	1.257	-.047
	24	5.225	1.209	-.177
	25	3.700	1.620	-.253
ACADEMIC	26	3.675	1.655	.054
	27	3.846	1.565	-.096
	28	4.846	1.755	.043
	29	5.725	1.502	.052
	30	4.600	1.566	.243
	31	5.575	1.318	.113
	32	3.846	1.496	-.139
AGE	33	3.225	1.165	-.058
	34	4.886	1.451	-.091
	35	4.714	1.296	-.048
	36	3.457	1.336	-.005

TABLE 1B, CONTINUED

Category	Item No.	Mean	S.D.	Correlation
	37	4.333	2.043	-.115
	38	4.538	2.075	.190
	39	5.325	1.789	-.255
PROFESSIONAL	40	5.615	1.480	-.416 T(-2.786).01
STATUS	41	4.250	1.581	.174
	42	5.282	1.146	.076
	43	5.615	1.184	-.224
	44	5.184	1.373	-.247
	45	4.300	1.556	-.042
	46	5.825	1.517	-.228
	47	3.225	1.732	.088
	48	6.050	1.319	-.119 H
	49	4.875	1.786	.026
	50	6.400	1.172	-.138
GENERAL	51	4.900	1.630	-.054
	52	5.575	1.375	.108
	53	4.538	1.144	-.271
	54	5.725	1.154	-.154
	55	5.079	1.746	-.112
	56	4.385	1.632	-.046
	57	4.949	1.716	.270

*Variable 1: Mean 1.659; Standard Deviation .693

H = Very High; L = Very Low;

T = t-test = 1.697, sign at .10 level

= 2.042, sign at .05 level

= 2.750, sign at .01 level

experience in industry, teaching experience, industrial experience, less than 2 years teaching experience, equal experience in industry, diploma and less than 2 years of teaching experience, respectively) related to experience background; 23, 24, 28, 29, and 30 (general engineering background, scientific background, educational background consideration, mathematical background, knowledge of fundamentals, respectively) related to academic background; 31, 34, and 35 (youth given preference, 30-40, and 40-50, respectively) related to age; 37, 38, 39, 40, 41, 42, 43, and 44 (entire professional range; polytechnic faculty, not engineering; polytechnic teacher; principal; head of department; lecturer; assistant lecturer; lab assistant; respectively) related to professional status; and 45, 46, 48, and 49 (willingness to work, equal experience background, highly recommended by his principal, desire to attend, respectively) related to general. The majority of the American professors rated Items 18, 19, and 21 (equal teaching experience, other criteria without regard to job experience, and diploma and two years of teaching experience, respectively) low on the seven-point scale. The majority of the professors rated Item 48, recommendation by principals, very high ($m = 6.050$). Item number 40, selection of principal as a participant, is negatively correlated ($r = -.416$) with the age of the American professor. The mean of 1.659 indicates that the younger professors assigned higher ratings to Indian

characteristics than did the older professors.

Table 2A indicates the relationship between two variables: the present position of the professors and preferred student characteristics. Of the six items reported in Table 1A, five of them are repeated in Table 2A. Item numbers 4 (verbal ability), 5 (writing expression), and 10 (willingness to ask questions) indicate positive high correlation ($r = .556$, $r = .394$, $r = .569$) to the present position of the American professors. The mean 5.320 indicates that professors, assistant professors and associate professors rated items higher on the five-point scale than did deans, consultants and department heads.

TABLE 2A

RELATIONSHIP BETWEEN THE PRESENT POSITION OF AMERICAN PROFESSORS AND PREFERRED STUDENT CHARACTERISTICS*

Item No.	Mean	S.D.	Correlation
4	4.320	.945	.556 T(3.205).01
5	4.280	.980	.394 T(2.056).05
6	4.320	.900	.311
8	4.400	1.041	.137
10	4.000	1.291	.569 T(3.320).01

*Variable 2: Mean 5.320; Standard Deviation 1.711

Table 2B indicates the relationship between two variables: present position of the American professors and the Indian

TABLE 2B

RELATIONSHIP BETWEEN THE PRESENT POSITION OF AMERICAN PROFESSORS AND INDIAN PARTICIPANT RATINGS*

Category	Item No.	Mean	S.D.	Correlation	
	1	5.000	2.757	-.085	
	2	4.125	1.296	.193	
	3	4.640	1.524	.030	
	4	3.840	1.281	.044	
EDUCATION	5	3.240	1.665	-.146	
	6	3.400	1.443	-.173	
	7	3.400	1.080	-.186	
	8	4.478	1.082	-.058	
	9	4.640	1.254	-.217	
	10	3.174	1.230	.126	
	11	4.000	2.566	-.191	
	12	5.167	1.685	-.005	
	13	3.478	1.592	-.287	
	14	4.304	1.690	-.255	
	15	4.696	1.363	-.096	
EXPERIENCE	16	4.348	1.152	-.142	
	17	4.348	1.301	-.169	
	18	2.522	1.310	-.466	N, T(-2.412).05
	19	2.864	1.552	-.355	N
	20	3.708	1.732	.178	
	21	3.250	1.622	.201	
	22	5.250	1.073	.420	T(2.170).05
	23	4.375	1.173	.363	T(1.828).10
	24	5.083	1.213	.255	
	25	3.917	1.472	.215	
ACADEMIC	26	3.833	1.435	.198	
	27	3.875	1.513	-.116	
	28	5.000	1.745	-.144	
	29	5.667	1.711	-.034	
	30	4.667	1.606	.213	
	31	5.500	1.445	.017	
	32	3.783	1.704	-.290	
AGE	33	3.583	1.248	-.114	
	34	5.300	1.129	-.171	
	35	5.000	.918	-.172	
	36	3.800	1.399	.145	

TABLE 2B, CONTINUED

Category	Item No.	Mean	S.D.	Correlation	
	37	4.250	2.069	.290	
	38	4.391	2.039	-.018	
	39	4.792	1.769	-.061	
PROFESSIONAL	40	5.261	1.657	.104	
STATUS	41	4.542	1.560	.011	
	42	5.391	1.158	.283	
	43	5.870	1.058	.303	
	44	5.409	1.221	.412	T(2.024).10
	45	4.583	1.558	.198	
	46	5.667	1.685	.025	
	47	3.292	1.681	-.318	
	48	6.083	1.283	.338	H
	49	4.958	1.805	-.148	
	50	6.292	1.268	-.046	
GENERAL	51	4.917	1.666	-.095	
	52	5.583	1.530	-.191	
	53	4.565	.992	.050	
	54	5.750	1.260	-.179	
	55	4.955	1.786	-.221	
	56	4.261	1.602	-.369	T(-1.817).10
	57	4.957	1.870	.144	

*Variable 2: Mean 5.143; Standard Deviation 1.711

participant ratings. The mean of the Indian participant ratings indicate the same rating scale to the items shown in Table 1B, Item numbers 18 (limited to participants with equal teaching experience) and 19 (other criteria without regard to previous job experience) rated low. However, Items 18 (equal teaching experience), 22 (has diploma and less than two years teaching experience), 23 (with degree or diploma having general engineering educational background), and 44 (selection of lab

assistant as participant) are highly correlated (r = -.466; r = .420; r = .363; r = .412) to the nearest position of the American professors. The mean (5.143) implies that the professors, assistant professors, and associate professors rated higher on the seven-point scale than did deans, consultants, and department heads.

Table 3A indicates the relationship between the variables: the institution the professors attended and preferred student characteristics.

TABLE 3A

RELATIONSHIP BETWEEN THE INSTITUTION AMERICAN PROFESSORS ATTENDED AND PREFERRED STUDENT CHARACTERISTICS*

Item No.	Mean	S.D.	Correlation
4	4.357	.958	-.024
5	4.381	.825	-.037
6	4.333	.786	.039
8	4.405	1.014	-.037
9	4.268	.895	-.045
10	4.190	1.194	-.013

*Variable 3: Mean 1.167; Standard Deviation .537

The means of Table 3A imply the same result as seen in Table 1A and 2A--that the majority of the professors rated highly (M = 4.357) on Items 4, 5, 6, 8, 9, and 10 (verbal ability, written expression, application of ideas, promptness, liked by peers, and willingness to ask questions, respectively). The

professors who had attended public institutions rated higher on the five-point scale than did professors who attended private institutions shown by M = 1.167. However, the sample is small. These are negative correlations between the two variables. Institutions attended by American professors and preferred student characteristics were presented in Table 3A.

Table 3B indicates the relationship between two variables: the institution professors attended and the Indian participant ratings. The means (4.095 and above) of the Indian participant ratings in Tables 1B and 2B imply that the majority of the professors rated highly on the items which had been indicated in Tables 1B and 2B. However, Items 15 (engineering degrees and less than two years industrial experience), 41 (department head), and 42 (lecturer selected as a participant) indicate positive correlation. Items 46 (equal experience and education) and 49 (desire to attend program) indicate negative correlation ($r = .311$; $r = .405$; $r = .283$; $r = -.396$; $r = -.312$) to the variable of institutions attended by professors. The mean (1.139) implies that the professors who attended public schools rated higher on the seven-point rating scale than professors from private schools. Item 48 (recommended by principal) is rated highly (M = 6.024) as shown in Tables 1B and 2B.

Table 4A presents the relationship between two variables: the institution attended by American professors

TABLE 3B

RELATIONSHIP BETWEEN INSTITUTIONS ATTENDED BY AMERICAN PROFESSORS AND RATINGS GIVEN TO INDIAN PARTICIPANTS*

Category	Item No.	Mean	S.D.	Correlation	
	1	4.611	2.453	-.023	
	2	4.024	1.151	-.127	
	3	4.714	1.436	.126	
	4	4.095	1.340	-.056	
EDUCATION	5	3.357	1.605	-.212	
	6	3.500	1.401	-.340	
	7	3.667	1.183	-.410	
	8	4.487	1.073	-.076	
	9	4.667	1.162	-.261	
	10	3.375	1.254	-.101	
	11	3.690	2.494	.185	
	12	5.317	1.753	.152	
	13	3.500	1.553	-.105	
	14	4.225	1.544	-.229	
	15	4.625	1.295	.311	T(2.016).10
EXPERIENCE	16	4.175	1.107	-.009	
	17	4.100	1.215	-.142	
	18	2.475	1.261	-.160	L
	19	2.897	1.569	-.032	L
	20	3.756	1.868	-.327	
	21	2.683	1.695	-.130	L
	22	5.195	1.030	.207	
	23	4.122	1.249	.042	
	24	5.220	1.194	.249	
	25	3.659	1.622	.125	
ACADEMIC	26	3.634	1.655	.155	
	27	3.800	1.572	-.166	
	28	4.875	1.742	.184	
	29	5.732	1.484	.058	
	30	4.537	1.598	.093	
	31	5.488	1.416	-.208	
	32	3.825	1.483	-.119	
AGE	33	3.293	1.230	-.002	
	34	4.917	1.442	.332	
	35	4.750	1.296	.138	
	36	3.528	1.383	-.007	

TABLE 3B, CONTINUED

Category	Item No.	Mean	S.D.	Correlation	
	37	4.325	2.018	.086	
	38	4.575	2.062	.248	
	39	5.268	1.803	-.201	
PROFESSIONAL	40	5.625	1.462	.084	
STATUS	41	4.293	1.585	.405	T(2.767).01
	42	5.300	1.137	.283	T(1.821).10
	43	5.625	1.170	.145	
	44	5.205	1.361	.194	
	45	4.341	1.559	-.130	
	46	5.854	1.509	-.396	T(2.690).05
	47	3.195	1.721	-.197	
	48	6.024	1.313	.099	H
	49	4.854	1.769	-.312	T(2.048).05
	50	6.415	1.161	.123	
GENERAL	51	4.927	1.618	.185	
	52	5.585	1.360	.132	
	53	4.525	1.132	-.069	
	54	5.732	1.141	-.166	
	55	5.051	1.731	-.010	
	56	4.375	1.612	.026	
	57	4.975	1.702	-.045	

*Variable 3: Mean 1.139; Standard Deviation .543

and preferred student characteristics. Table 4A implies the same results which we have discussed in Tables 1A, 2A, and 3A. The mean (1.762) indicates that the professors from engineering and technology rated higher on the five-point scale than the professors from architecture, art, and science faculties. The mean indicates the same rating shown in Tables 1A, 2A, and 3A.

TABLE 4A

RELATIONSHIP BETWEEN THE INSTITUTION ATTENDED BY AMERICAN PROFESSORS AND PREFERRED STUDENT CHARACTERISTICS*

Item No.	Mean	S.D.	Correlation
4	4.357	.958	-.151
5	4.381	.825	-.215
6	4.333	.786	-.197
8	4.405	1.014	-.123
9	4.268	.895	-.111
10	4.190	1.194	-.110

*Variable 4: Mean 1.762; Standard Deviation .576

Table 4B presents the relationship between two variables: the institution the professor attended and Indian participant ratings. In Table 4B the mean (1.778) implies that professors from engineering and technology rated higher on the seven-point scale than the professors from architecture and science colleges. The mean (4.611) indicates the same results to the items which are shown in Tables 1B, 2B, and 3B. However Items 46 (participants having equal experience, educational background, and professional status) and 49 (desire to attend summer program) indicate negatively ($r = -.358$; $r = -.305$) to the other variable--institution attended by professor. Item 48 (recommendation by his principal) implies the same results--a high rating ($M = 6.024$) as indicated in Tables 1B, 2B, and 3B.

TABLE 4B

RELATIONSHIP BETWEEN THE INSTITUTION ATTENDED BY AMERICAN PROFESSORS AND INDIAN PARTICIPANT RATINGS*

Category	Item No.	Mean	S.D.	Correlation
	1	4.611	2.453	.077
	2	4.024	1.151	-.066
	3	4.714	1.436	.034
	4	4.095	1.340	.062
EDUCATION	5	3.357	1.605	-.011
	6	3.500	1.401	.091
	7	3.667	1.183	-.012
	8	4.487	1.073	.191
	9	4.667	1.162	-.231
	10	3.375	1.254	.189
	11	3.690	2.494	.270
	12	5.317	1.753	.046
	13	3.500	1.553	-.243
	14	4.225	1.544	-.287
	15	4.625	1.295	-.047
EXPERIENCE	16	4.175	1.107	-.057
	17	4.100	1.215	-.004
	18	2.475	1.261	-.167 L
	19	2.897	1.569	-.031 L
	20	3.756	1.868	.066
	21	2.683	1.695	.004 L
	22	5.195	1.030	.117
	23	4.122	1.249	.144
	24	5.220	1.194	-.074
	25	3.659	1.622	.187
ACADEMIC	26	3.634	1.655	.284
	27	3.800	1.572	.147
	28	4.875	1.742	.078
	29	5.732	1.484	-.101
	30	4.537	1.598	.242
	31	5.488	1.416	-.050
	32	3.825	1.483	-.167
AGE	33	3.293	1.230	-.191
	34	4.917	1.442	.006
	35	4.750	1.296	.253
	36	3.528	1.383	.193

TABLE 4B, CONTINUED

Category	Item No.	Mean	S.D.	Correlation	
	37	4.325	2.018	.109	
	38	4.575	2.062	.068	
	39	5.268	1.803	.059	
PROFESSIONAL	40	5.625	1.462	.141	
STATUS	41	4.293	1.585	.018	
	42	5.300	1.137	.066	
	43	5.625	1.170	.252	
	44	5.205	1.361	.161	
	45	4.341	1.559	.086	
	46	5.854	1.509	-.358	T(2.391).05
	47	3.195	1.721	-.083	
	48	6.024	1.313	.107	H
	49	4.854	1.769	-.305	T(2.001).10
	50	6.415	1.161	-.086	
GENERAL	51	4.927	1.618	.199	
	52	5.585	1.360	-.088	
	53	4.525	1.132	-.011	
	54	5.732	1.141	-.054	
	55	5.051	1.731	-.041	
	56	4.375	1.612	-.037	
	57	4.975	1.702	.049	

*Variable 4: Mean 1.778; Standard Deviation .591

Table 5A indicates the relationship between two variables: education of the professors and preferred student characteristics. Table 5A implies the same results which have been shown in Tables 1A, 2A, 3A, and 4A. However, the mean (1.690) indicates that the professors who have a B.S. degree rated higher on the five-point scale than the professors who have an M.A. and Ph.D. degree.

TABLE 5A

RELATIONSHIP BETWEEN THE EDUCATION OF AMERICAN PROFESSORS AND PREFERRED STUDENT CHARACTERISTICS*

Item No.	Mean	S.D.	Correlation
4	4.357	.958	.136
5	4.381	.825	.128
6	4.333	.786	.061
8	4.405	1.014	.009
9	4.268	.895	-.114
10	4.190	1.194	.014

*Variable 5: Mean 1.690; Standard Deviation .680

Table 5B indicates the relationship between two variables: education of the professors to items rated highly and to Indian participant rating. Table 5B implies the same results that have been shown in Tables 1B, 2B, 3B, and 4B. The mean (1.690) shows that the professors who have a B.S. degree rated higher on the seven-point scale than the professors who have an M.A. and Ph.D. degree. Item 48, recommendation by his principal, presents a very high rating, M = 6.024, indicated in Table 5B. Items 18 (equal industry experience), 19 (other criteria without regard to their previous job experience), and 21 (diploma and at least two years of teaching experience) indicate low ratings on the scale (M = 2.475).

TABLE 5B

RELATIONSHIP BETWEEN THE EDUCATION OF AMERICAN PROFESSORS AND INDIAN PARTICIPANT RATINGS*

Category	Item No.	Mean	S.D.	Correlation
	1	4.611	2.453	.061
	2	4.024	1.151	-.116
	3	4.714	1.436	.107
	4	4.095	1.340	-.101
EDUCATION	5	3.357	1.605	-.008
	6	3.500	1.401	-.064
	7	3.667	1.183	-.040
	8	4.487	1.073	.084
	9	4.667	1.162	.021
	10	3.375	1.254	-.087
	11	3.690	2.494	-.317
	12	5.317	1.753	-.077
	13	3.500	1.553	-.050
	14	4.225	1.544	.150
	15	4.625	1.295	-.177
EXPERIENCE	16	4.175	1.107	.080
	17	4.100	1.215	.138
	18	2.475	1.261	.254 L
	19	2.897	1.569	.096 L
	20	3.756	1.868	.196
	21	2.683	1.695	-.010 L
	22	5.195	1.030	-.121
	23	4.122	1.249	.052
	24	5.220	1.194	-.253
	25	3.659	1.622	-.488
ACADEMIC	26	3.634	1.655	-.164
	27	3.800	1.572	-.487
	28	4.875	1.742	.278
	29	5.732	1.484	.006
	30	4.537	1.598	-.035
	31	5.488	1.416	-.085
	32	3.825	1.483	.204
AGE	33	3.293	1.230	.158
	34	4.917	1.442	.032
	35	4.750	1.296	.008
	36	3.528	1.383	-.037

TABLE 5B, CONTINUED

Category	Item No.	Mean	S.D.	Correlation	
	37	4.325	2.018	-.277	
	38	4.575	2.062	-.010	
	39	5.268	1.803	.037	
PROFESSIONAL	40	5.625	1.462	-.130	
STATUS	41	4.293	1.585	.171	
	42	5.300	1.137	.031	
	43	5.625	1.170	-.063	
	44	5.205	1.361	-.068	
	45	4.341	1.559	-.176	
	46	5.854	1.509	.226	
	47	3.195	1.721	-.294	
	48	6.024	1.313	.010	
	49	4.854	1.769	-.109	H
	50	6.415	1.161	-.072	
GENERAL	51	4.927	1.618	-.448	T(-3.128) .01
	52	5.585	1.360	.174	
	53	4.525	1.132	-.282	T(-1.814) .10
	54	5.732	1.141	.108	
	55	5.051	1.731	.084	
	56	4.375	1.612	.021	
	57	4.975	1.702	-.237	

*Variable 5: Mean 1.694; Standard Deviation .710

Table 6A shows the relationship between two variables: teaching experience of American professors and preferred student characteristics. The average teaching experience of American professors is not less than five years. The mean (2.775) implies that the professors who had five to ten years of teaching experience rated higher on the five-point scale than the professors who had more than ten years experience. Item 5, writing ability, is negatively (r = -.326) correlated

to teaching experience of the professors.

TABLE 6A

RELATIONSHIP BETWEEN TEACHING EXPERIENCE OF AMERICAN PROFESSORS AND PREFERRED STUDENT CHARACTERISTICS*

Item No.	Mean	S.D.	Correlation
4	4.325	.971	-.079
5	4.350	.834	-.326 T(-.2123).05
6	4.300	.791	-.199
8	4.375	1.030	-.088
9	4.231	.902	-.249
10	4.175	1.217	-.153

*Variable 6: Mean 2.775; Standard Deviation 1.025

Table 6B presents the relationship between two variables: teaching experience of American professors and Indian participant ratings. The Mean (2.853) implies that the professors who had five to ten years of teaching experience rated higher on the seven-point rating scale than did the professors who had more than ten years of teaching experience. Item 17, limited to equal experience in industry, is highly correlated positively ($r = .354$) to teaching experience of the professors. Items 22, 24, 37, and 44 (diploma and less than two years of teaching experience, scientific background, representing the entire professional range, and selection of labatorary assistants, respectively) are negatively correlated to teaching

TABLE 6B

RELATIONSHIP BETWEEN TEACHING EXPERIENCE OF AMERICAN PROFESSORS AND INDIAN PARTICIPANT RATINGS*

Category	Item No.	Mean	S.D.	Correlation	
	1	4.588	2.476	.280	
	2	3.974	1.135	.062	
	3	4.750	1.463	.167	
	4	4.075	1.366	-.116	
EDUCATION	5	3.400	1.598	.056	
	6	3.450	1.413	-.070	
	7	3.650	1.210	.224	
	8	4.500	1.084	.050	
	9	4.700	1.181	.218	
	10	3.342	1.279	-.112	
	11	3.675	2.464	-.182	
	12	5.400	1.692	-.154	
	13	3.538	1.553	-.010	
	14	4.205	1.559	.200	
	15	4.615	1.310	-.214	
EXPERIENCE	16	4.154	1.113	.152	
	17	4.077	1.222	.354	T(2.305).05
	18	2.487	1.275	.301	L
	19	2.921	1.583	.110	L
	20	3.725	1.881	.233	
	21	2.625	1.675	-.065	L
	22	5.200	1.043	-.317	T(-2.058).05
	23	4.100	1.257	-.042	
	24	5.200	1.203	-.483	T(-3.397).01
	25	3.625	1.625	-.328	
ACADEMIC	26	3.650	1.673	.028	
	27	3.769	1.580	-.224	
	28	4.949	1.701	.264	
	29	5.725	1.502	-.008	
	30	4.550	1.616	.139	
	31	5.475	1.432	.110	
	32	3.872	1.472	.171	
AGE	33	3.275	1.240	.191	
	34	4.943	1.454	-.009	
	35	4.771	1.308	-.063	
	36	3.514	1.401	.149	

TABLE 6B, CONTINUED

Category	Item No.	Mean	S.D.	Correlation	
	37	4.282	2.025	-.331	T(-2.136).05
	38	4.564	2.087	.045	
	39	5.325	1.789	-.071	
PROFESSIONAL	40	5.718	1.356	-.282	
STATUS	41	4.300	1.604	.214	
	42	5.333	1.132	-.015	
	43	5.667	1.155	-.209	
	44	5.237	1.364	-.360	T(-2.319).05
	45	4.350	1.578	-.172	
	46	5.825	1.517	.106	
	47	3.125	1.682	-.102	
	48	6.000	1.320	.000	H
	49	4.875	1.786	-.100	
	50	6.400	1.172	-.158	
GENERAL	51	4.950	1.632	-.252	
	52	5.625	1.353	-.007	
	53	4.538	1.144	-.240	
	54	5.725	1.154	.141	
	55	5.132	1.679	.082	
	56	4.436	1.586	-.016	
	57	5.026	1.693	-.231	

*Variable 6: Mean 2.853; Standard Deviation 1.048

experience of the professors. However Item 48 (recommended highly by his principal) is very highly rated (M = 6.000) as we have seen in Tables 1B, 2B, 3B, 4B, and 5B. The same items are rated highly as shown in Tables 1B to 5B.

Table 7A shows the relationship between two variables: industrial experience of American professors and preferred student characteristics.

TABLE 7A

RELATIONSHIP BETWEEN INDUSTRIAL EXPERIENCE OF AMERICAN PROFESSORS AND PREFERRED STUDENT CHARACTERISTICS*

Item No.	Mean	S.D.	Correlation
4	4.371	1.003	-.092
5	4.457	.741	-.287
6	4.371	.808	-.182
8	4.371	1.066	-.165
9	4.265	.931	-.337 T(-2.027).10
10	4.200	1.232	-.146

*Variable 7: Mean 1.800; Standard Deviation 1.076

Table 7B represents the relationship between two variables: industrial experience of American professors and the Indian participant ratings. The mean (1.767) implies that the professors who had five to ten years of teaching experience rated higher on the seven-point scale on Indian participant ratings than the professors who had more than ten years of industrial experience. Item 46, participant having equal experience, educational background, and professional status, is highly rated (M = 6.000) in the rating scale and also highly negatively correlated (r = -.397) to the industrial experience of American professors.

TABLE 7B

RELATIONSHIP BETWEEN INDUSTRIAL EXPERIENCE OF AMERICAN PROFESSORS AND INDIAN PARTICIPANT RATINGS*

Category	Item No.	Mean	S.D.	Correlation
	1	4.733	2.406	.248
	2	4.029	1.087	.240
	3	4.657	1.494	.193
	4	4.143	1.396	.117
EDUCATION	5	3.343	1.571	.642
	6	3.400	1.397	-.199
	7	3.714	1.073	-.229
	8	4.424	1.091	-.128
	9	4.829	1.071	-.158
	10	3.235	1.257	-.115
	11	3.771	2.498	-.007
	12	5.143	1.833	.253
	13	3.529	1.562	.058
	14	4.441	1.481	.059
	15	4.588	1.282	.122
EXPERIENCE	16	4.265	1.109	-.096
	17	4.147	1.282	.007
	18	2.500	1.308	.079 L
	19	2.882	1.647	.071 L
	20	3.857	1.881	-.174
	21	2.914	1.721	-.231 L
	22	5.171	1.043	.110
	23	4.086	1.314	-.050
	24	5.200	1.208	.122
	25	3.600	1.649	.069
ACADEMIC	26	3.429	1.577	.242
	27	3.853	1.672	.135
	28	4.706	1.818	.065
	29	5.686	1.530	.068
	30	4.400	1.612	.216
	31	5.400	1.459	.202
	32	3.735	1.421	-.112
AGE	33	3.343	1.282	-.119
	34	4.903	1.423	-.150
	35	4.742	1.316	.031
	36	3.645	1.404	.077

TABLE 7B, CONTINUED

Category	Item No.	Mean	S.D.	Correlation
	37	4.441	1.957	-.016
	38	4.353	2.116	.114
	39	5.229	1.880	-.078
PROFESSIONAL	40	5.441	1.501	-.276
STATUS	41	4.200	1.623	.225
	42	5.382	1.101	.146
	43	5.676	1.173	-.149
	44	5.273	1.353	-.166
	45	4.514	1.597	-.092 H
	46	6.000	1.372	-.397 T(-2.487).05
	47	3.229	1.784	.193
	48	5.886	1.367	-.036
	49	4.943	1.644	.176
	50	6.429	1.092	-.175
GENERAL	51	4.943	1.589	.027
	52	5.486	1.380	.166
	53	4.588	1.076	-.019
	54	5.771	1.114	-.039
	55	4.912	1.798	-.152
	56	4.343	1.679	-.107
	57	5.029	1.636	.287 T(1.718).10

*Variable 7: Mean 1.767; Standard Deviation 1.104

Table 8A shows the relationship between two variables: the number of times the professors attended the program and preferred student characteristics. The Mean (1.667) indicates that the professors who attended the program once rated more highly on the five-point scale than the professors who attended twice or three times. The same item in Table 8A is rated highly in Tables 1A to 7A.

TABLE 8A

RELATIONSHIP BETWEEN THE NUMBER OF TIMES THE PROFESSORS ATTENDED THE PROGRAM AND PREFERRED STUDENT CHARACTERISTICS*

Item No.	Mean	S.D.	Correlation
4	4.357	.958	-.062
5	4.381	.825	-.205
6	4.333	.786	.101
8	4.405	1.014	-.039
9	4.268	.895	-.211
10	4.190	1.194	.042

*Variable 8: Mean 1.667; Standard Deviation .816

Table 8B indicates the relationship between two variables: the number of times the professors attended the program and Indian participant ratings. The mean (1.667) implies that the professors who attended the program once rated more highly on the seven-point scale on Indian participant ratings than the professors who attended twice or three times. Items 28, 40, and 41 (educational background should be considered, principal should be selected, and head of a department should be selected, respectively) are highly positively correlated ($r = .349$; $r = .341$; $r = .362$) to the variable number of times the professors attended the program in India. The professors gave low ratings on items rated highly as shown in Tables 1B to 7B. Item 48 (highly recommended by his principal) rated very high

TABLE 8B

RELATIONSHIP BETWEEN THE NUMBER OF TIMES THE PROFESSORS ATTENDED THE PROGRAM AND INDIAN PARTICIPANT RATING*

Category	Item No.	Mean	S.D.	Correlation	
	1	4.611	2.453	.153	
	2	4.024	1.151	-.018	
	3	4.714	1.436	-.021	
	4	4.095	1.340	-.015	
EDUCATION	5	3.357	1.605	-.112	
	6	3.500	1.401	-.107	
	7	3.667	1.183	-.269	
	8	4.487	1.073	-.005	
	9	4.667	1.162	-.223	
	10	3.375	1.254	-.043	
	11	3.690	2.494	.116	
	12	5.317	1.753	.246	
	13	3.500	1.553	-.161	
	14	4.225	1.544	-.002	
	15	4.625	1.295	.027	
EXPERIENCE	16	4.175	1.107	-.020	
	17	4.100	1.215	.033	
	18	2.475	1.261	-.069	L
	19	2.897	1.569	-.207	L
	20	3.756	1.868	.063	
	21	2.683	1.695	.052	L
	22	5.195	1.030	.105	
	23	4.122	1.249	.014	
	24	5.220	1.194	-.029	
	25	3.659	1.622	-.234	
ACADEMIC	26	3.634	1.655	.078	
	27	3.800	1.572	-.199	
	28	4.875	1.742	.349	T(2.294).05
	29	5.732	1.484	.031	
	30	4.537	1.598	.076	
	31	5.488	1.416	-.230	
	32	3.825	1.483	-.006	
AGE	33	3.293	1.230	.070	
	34	4.917	1.442	.093	
	35	4.750	1.296	.099	
	36	3.528	1.383	.145	

TABLE 8B, CONTINUED

Category	Item No.	Mean	S.D.	Correlation	
	37	4.325	2.018	-.125	
	38	4.575	2.062	.112	
	39	5.268	1.803	.279	
PROFESSIONAL	40	5.625	1.462	.341	T(2.238).05
STATUS	41	4.293	1.585	.362	T(2.424).05
	42	5.300	1.137	.297	
	43	5.625	1.170	.136	
	44	5.205	1.361	.150	
	45	4.341	1.559	.009	
	46	5.854	1.509	-.018	
	47	3.195	1.721	-.363	
	48	6.024	1.313	.170	H
	49	4.854	1.769	-.171	
	50	6.415	1.161	-.095	
GENERAL	51	4.927	1.618	.095	
	52	5.585	1.360	.193	
	53	4.525	1.132	-.032	
	54	5.732	1.141	.522	T(3.819).01
	55	5.051	1.731	-.080	
	56	4.375	1.612	-.175	
	57	4.975	1.702	-.115	

*Variable 8: Mean 1.667; Standard Deviation .862

(M = 6.024) as we have noticed before in other scales.

Table 9A shows the relationship between the two variables: location the professors attended in India and preferred student characteristics. The mean (4.714) implies that professors from Bhopal, Ahmedabad and Jadavpur rated higher on the five-point scale than did the professors who attended at Madras, Banglore, and Chandigarh.

TABLE 9A

RELATIONSHIP BETWEEN THE LOCATION THE PROFESSORS ATTENDED IN INDIA AND PREFERRED STUDENT CHARACTERISTICS*

Item No.	Mean	S.D.	Correlation	
4	4.357	.958	.269	
5	4.381	.825	.274	
6	4.333	.786	.206	
8	4.405	1.014	.352	T(2.375).05
9	4.268	.895	.131	
10	4.190	1.194	.259	

*Variable 9: Mean 4.714; Standard Deviation 2.865

Item 8, promptness, indicates positive correlation (r = .352) between the variable location the professors attended in India. The mean (4.357) and above represent the same rating as we noted in Tables 1A to 8A.

Table 9B indicates the relationship between two variables: the location the professors attended in India and preferred student characteristics. Professors from Bhopal, Ahmedabad, and Jadavpur rated higher on the seven-point Indian participant ratings than the professors who attended at Madras, Banglore, and Chandigarth. Items 1, 19, and 42 (diploma holders as good as degree holders, selected according to other criteria without regard to previous job experience, and lecturer should be selected as participant, respectively) are negatively correlated to the location

TABLE 9B

RELATIONSHIP BETWEEN THE LOCATION THE PROFESSORS ATTENDED IN INDIA AND INDIAN PARTICIPANT RATINGS*

Category	Item No.	Mean	S.D.	Correlation	
	1	4.611	2.453	-.494	T(-3.317).01
	2	4.024	1.151	.054	
	3	4.714	1.436	-.044	
	4	4.095	1.340	-.266	
EDUCATION	5	3.357	1.605	.230	
	6	3.500	1.401	.188	
	7	3.667	1.183	-.058	
	8	4.487	1.073	-.237	
	9	4.667	1.162	.161	
	10	3.375	1.254	-.051	
	11	3.690	2.494	-.159	
	12	5.317	1.753	-.231	
	13	3.500	1.553	.148	
	14	4.225	1.544	.026	
	15	4.625	1.295	.023	
EXPERIENCE	16	4.175	1.107	.122	
	17	4.100	1.215	.253	
	18	2.475	1.261	-.251	L
	19	2.897	1.569	-.313	T(-2.002).10
	20	3.756	1.868	-.002	L
	21	2.683	1.695	.004	
	22	5.195	1.030	-.093	
	23	4.122	1.249	-.005	
	24	5.220	1.194	.059	
	25	3.659	1.622	.073	
ACADEMIC	26	3.634	1.655	-.098	
	27	3.806	1.572	-.037	
	28	4.875	1.742	-.059	
	29	5.732	1.484	-.054	
	30	4.537	1.595	-.182	
	31	5.488	1.416	-.111	
	32	3.825	1.483	.334	
AGE	33	3.293	1.230	.119	
	34	4.917	1.442	.125	
	35	4.750	1.296	-.105	
	36	3.528	1.383	.039	

TABLE 9B, CONTINUED

Category	Item No.	Mean	S.D.	Correlation	
	37	4.325	2.018	.063	
	38	4.575	2.062	-.052	
	39	5.268	1.803	-.016	
PROFESSIONAL	40	5.625	1.462	.027	
STATUS	41	4.293	1.585	-.170	
	42	5.300	1.137	-.413	T(-2.794).01
	43	5.625	1.176	.041	
	44	5.205	1.361	.166	
	45	4.341	1.559	.086	
	46	5.854	1.509	.261	
	47	3.195	1.721	-.000	
	48	6.024	1.313	-.104	H
	49	4.854	1.769	.056	
	50	6.415	1.161	-.051	
GENERAL	51	4.927	1.618	-.250	
	52	5.585	1.360	-.103	
	53	4.525	1.132	-.003	
	54	5.732	1.141	.040	
	55	5.051	1.731	-.157	
	56	4.375	1.612	-.277	
	57	4.975	1.702	-.096	

*Variable 9: Mean 4.333; Standard Deviation 2.859

professors attended in India (r = -.494; r = -.313; r = -.413). The professors received low mean ratings on Items 18, 19, and 21 (limited to those participants with equal teaching experience, selected other criteria without regard to previous job experience, and diploma and at least two years teaching experience, respectively). Item 48, recommended by his principal, rated very highly (M = 6.024) in Table 9B as we have seen in Tables 1B to 8B.

Table 10A shows the relationship between two variables: the subject taught by professors in India and preferred student characteristics. The mean (2.976) implies that the professors who taught mechanical and electrical engineering subjects rated more highly on the five-point rating scale of preferred student characteristics than did the professors who taught industrial and drafting. The same number of items rated highly as we have seen in Tables 1A to 9A.

TABLE 10A

RELATIONSHIP BETWEEN THE SUBJECT TAUGHT BY PROFESSORS IN INDIA AND PREFERRED STUDENT CHARACTERISTICS*

Item No.	Mean	S.D.	Correlation
4	4.357	.958	-.029
5	4.381	.825	-.034
6	4.333	.786	.029
8	4.405	1.014	-.078
9	4.268	.895	.134
10	4.190	1.194	.003

*Variable 10: Mean 2.976; Standard Deviation 1.423

Table 10B shows the relationship between two variables: the subject taught by professors in India and Indian participant ratings. The mean (3.028) indicates that the professors who taught mechanical and electrical subjects rated higher on the seven-point scale on Indian participant ratings than did the professors who taught industrial and drafting.

TABLE 10B

RELATIONSHIP BETWEEN THE SUBJECT TAUGHT BY PROFESSORS IN INDIA AND INDIAN PARTICIPANT RATINGS*

Category	Item No.	Mean	S.D.	Correlation	
	1	4.611	2.453	-.162	
	2	4.024	1.151	-.271	
	3	4.714	1.436	-.182	
	4	4.095	1.340	.104	
EDUCATION	5	3.357	1.605	.207	
	6	3.500	1.401	.116	
	7	3.667	1.183	.140	
	8	4.487	1.073	.077	
	9	4.667	1.162	.084	
	10	3.375	1.254	.253	
	11	3.690	2.494	-.098	
	12	5.317	1.753	.200	
	13	3.500	1.553	.099	
	14	4.225	1.544	-.140	
	15	4.625	1.295	-.041	
EXPERIENCE	16	4.175	1.107	-.310	T(-2.010).10
	17	4.100	1.215	-.462	T(-3.208).01
	18	2.475	1.261	.111	L
	19	2.897	1.569	.159	L
	20	3.756	1.868	-.036	
	21	2.683	1.695	-.228	L
	22	5.195	1.030	-.021	
	23	4.122	1.249	-.144	
	24	5.220	1.194	.220	
	25	3.659	1.622	.124	
ACADEMIC	26	3.634	1.655	-.007	
	27	3.800	1.572	.005	
	28	4.875	1.742	-.267	
	29	5.732	1.484	-.129	
	30	4.537	1.598	-.195	
	31	5.488	1.416	.170	
	32	3.825	1.483	-.181	
AGE	33	3.293	1.230	-.163	
	34	4.917	1.442	-.023	
	35	4.750	1.296	.076	
	36	3.528	1.383	-.301	

TABLE 10B, CONTINUED

Category	Item No.	Mean	S.D.	Correlation	
	37	4.325	2.018	-.061	
	38	4.575	2.062	.020	
	39	5.268	1.803	-.121	
PROFESSIONAL	40	5.625	1.462	-.036	
STATUS	41	4.293	1.585	-.104	
	42	5.300	1.137	.116	
	43	5.625	1.176	.081	
	44	5.205	1.361	-.022	
	45	4.341	1.559	-.129	
	46	5.854	1.509	.037	
	47	3.195	1.721	-.023	
	48	6.024	1.313	.162	
	49	4.854	1.769	.193	
	50	6.415	1.161	.024	
GENERAL	51	4.927	1.618	-.098	
	52	5.585	1.360	-.008	
	53	4.525	1.132	.105	
	54	5.732	1.141	-.292	T(-1.908).10
	55	5.051	1.731	.168	
	56	4.375	1.612	.175	
	57	4.975	1.702	.212	

*Variable 10: Mean 3.028; Standard Deviation 1.483

Items 16, participants with engineering degrees and less than two years of teaching experience, and 17, limited to those participants with equal experience in industry, are negatively correlated to the variable subject taught by professors in India ($r = -.310$; $r = -.462$). Item 48, highly recommended by his principal, is rated highly ($M = 6.024$) on the scale while Items 18, limiting to participants with equal teaching experience, and 19, selected according to other criteria without

regard to previous job experience, and 21, diploma and at least two years of teaching experience, rated very low on the scale.

Table 11A presents the relationship between two variables: the factors that influence professors to go to India and preferred student characteristics. The mean (2.786) implies that the professors who gave reasons as "professional interest", and "service" as factors rated more highly than did professors giving such reasons as "salary", "challenge", and "curiosity". The same items rated highly on the scale by professors as indicated in Tables 1A to 10A.

TABLE 11A

RELATIONSHIP BETWEEN THE FACTORS THAT INFLUENCE AMERICAN PROFESSORS TO GO TO INDIA AND PREFERRED STUDENT CHARACTERISTICS*

Item No.	Mean	S.D.	Correlation
4	4.357	.958	-.060
5	4.381	.825	-.047
6	4.333	.786	-.019
8	4.405	1.014	-.216
9	4.268	.895	-.084
10	4.190	1.194	.035

*Variable 11: Mean 2.786; Standard Deviation 1.601

Table 11B reveals the relationship between two variables: the factors that influence professors to go to

TABLE 11B

RELATIONSHIP BETWEEN THE FACTORS THAT INFLUENCE PROFESSORS TO GO TO INDIA AND INDIAN PARTICIPANT RATINGS*

Category	Item No.	Mean	S.D.	Correlation
	1	4.611	2.453	-.037
	2	4.024	1.151	.150
	3	4.714	1.436	-.080
	4	4.095	1.340	-.047
EDUCATION	5	3.357	1.605	-.102
	6	3.500	1.401	-.158
	7	3.667	1.183	-.219
	8	4.487	1.073	-.176
	9	4.667	1.162	-.262
	10	3.375	1.254	.081
	11	3.690	2.494	.044
	12	5.317	1.753	.067
	13	3.500	1.553	-.141
	14	4.225	1.544	.057
	15	4.625	1.295	.284 T(1.824).10
EXPERIENCE	16	4.175	1.107	-.181
	17	4.100	1.215	-.263
	18	2.475	1.261	-.270 L
	19	2.897	1.569	-.011 L
	20	3.756	1.868	-.091
	21	2.683	1.695	-.060 L
	22	5.195	1.030	.129
	23	4.122	1.249	-.174
	24	5.220	1.194	.217
	25	3.659	1.622	.346
ACADEMIC	26	3.634	1.655	.234
	27	3.800	1.572	.176
	28	4.875	1.742	-.242
	29	5.732	1.484	.113
	30	4.537	1.598	.119
	31	5.488	1.416	-.143
	32	3.825	1.483	-.384
AGE	33	3.293	1.230	-.260
	34	4.917	1.442	-.274
	35	4.750	1.296	.045
	36	3.528	1.383	.154

TABLE 11B, CONTINUED

Category	Item No.	Mean	S.D.	Correlation	
	37	4.325	2.018	.373	T(2.479).05
	38	4.575	2.062	.168	
	39	5.268	1.803	-.076	
PROFESSIONAL	40	5.625	1.462	-.017	
STATUS	41	4.293	1.585	.023	
	42	5.300	1.137	.057	
	43	5.625	1.170	-.022	
	44	5.205	1.361	-.018	
	45	4.341	1.559	.047	
	46	5.854	1.509	-.197	
	47	3.195	1.721	-.058	
	48	6.024	1.313	-.116	H
	49	4.854	1.769	-.098	
	50	6.415	1.161	.031	
GENERAL	51	4.927	1.618	.281	
	52	5.585	1.360	.008	
	53	4.525	1.132	.190	
	54	5.732	1.141	-.287	
	55	5.051	1.731	-.391	T(-2.584).05
	56	4.375	1.612	-.275	
	57	4.975	1.702	.104	

*Variable 11: Mean 2.917; Standard Deviation 1.645

India and items of Indian participant ratings. The mean (2.917) implies that the professors who gave reasons as "professional interest" and "service" rated more highly than did the professors who gave reasons such as "salary", "challenge", and "curiosity". The same number of items rated highly on the scale in Table 11B by professors as indicated in Tables 1B to 10B. Items 15 (engineering degree and less

than two years of industrial experience) and 37 (represent the entire professional range) are positively correlated (r = .284; r = .373) to the variable--factors that influence professors to go to India. Item 48 (highly recommended by his principal) is highly rated (M = 6.024) while Items 17, 18, and 19 (limited to equal experience in industry, limited to equal teaching experience, and selected according to other criteria without regard to previous job experience, respectively) are rated low on the scale (M = 2.475).

Table 12A indicates the relationship between two variables: the reason to go again to India and preferred student characteristics. The mean (1.262) implies that the professors who had a desire to return to India rated higher on the scale than did the professors who did not desire to return to India. The same items rated highly in Table 12A as indicated in Tables 1A to 11A.

TABLE 12A

RELATIONSHIP BETWEEN REASONS OF WANTING TO RETURN TO INDIA AND PREFERRED STUDENT CHARACTERISTICS*

Item No.	Mean	S.D.	Correlation
4	4.357	.958	.106
5	4.381	.825	.167
6	4.333	.786	-.104
8	4.405	1.014	.123
9	4.268	.895	.170
10	4.190	1.194	-.045

*Variable 12: Mean 1.262; Standard Deviation .497

Table 12B represents the relationship between two variables: the desire to return to India and Indian participant ratings. The mean (1.222) implies that the professors who had a desire to return to India rated higher on the seven-point scale than did the professors who had no desire to return. Items 12 and 40 (regardless of other qualifications, the participants should have practical experience in industry; and principal should be selected as a participant) are negatively correlated ($r = -.297$; $r = -.364$) to the variable desire to return to India. Item 48, highly recommended by his principal, is highly rated ($M = 6.024$) on the scale while Items 18, 19, and 21 (limited to participants with equal teaching experience, other criteria without regard to job experience, and diploma and at least two years of teaching experience) are rated lower in the scale ($M = 2.475$).

Table 13A shows the relationship between two variables: most important objective to attend the program and preferred student characteristics. The mean (2.833) implies that the professors who thought "curriculum" and "education" as important objectives rated higher than did those who thought "method", "goodwill", and "teachers" as important objectives of the program. The same number of items rated higher as indicated in Tables 1A to 12A.

TABLE 12B

RELATIONSHIP BETWEEN REASON OF WANTING TO RETURN

AND INDIAN PARTICIPANT RATINGS*

Category	Item No.	Mean	S.D.	Correlation
	1	4.611	2.453	-.069
	2	4.024	1.151	.205
	3	4.714	1.436	.073
	4	4.095	1.340	-.185
EDUCATION	5	3.357	1.605	.033
	6	3.500	1.401	.088
	7	3.667	1.183	.069
	8	4.487	1.073	-.137
	9	4.667	1.162	.113
	10	3.375	1.254	-.207
	11	3.690	2.494	-.110
	12	5.317	1.753	-.297 T(-1.940).10
	13	3.500	1.553	-.167
	14	4.225	1.544	.294
	15	4.625	1.295	.070
EXPERIENCE	16	4.175	1.107	.246
	17	4.100	1.215	.214
	18	2.475	1.261	-.155 L
	19	2.897	1.569	-.268 L
	20	3.756	1.868	.039
	21	2.683	1.695	.186 L
	22	5.195	1.030	-.047
	23	4.122	1.249	.155
	24	5.220	1.194	-.137
	25	3.659	1.622	-.050
ACADEMIC	26	3.634	1.655	-.103
	27	3.800	1.572	-.033
	28	4.875	1.742	-.171
	29	5.732	1.484	.092
	30	4.537	1.598	-.012
	31	5.488	1.416	.149
	32	3.825	1.483	.201
AGE	33	3.293	1.230	.086
	34	4.917	1.442	.109
	35	4.750	1.296	-.064
	36	3.528	1.383	-.092

TABLE 12B, CONTINUED

Category	Item No.	Mean	S.D.	Correlation	
	37	4.325	2.018	-.084	
	38	4.575	2.062	-.069	
	39	5.268	1.803	-.246	
PROFESSIONAL	40	5.625	1.462	-.364	T(-2.411).05
STATUS	41	4.293	1.585	-.062	
	42	5.300	1.137	-.183	
	43	5.625	1.170	-.189	
	44	5.205	1.361	-.157	
	45	4.341	1.559	-.276	
	46	5.854	1.509	.219	
	47	3.195	1.721	.150	
	48	6.024	1.313	.107	
	49	4.854	1.769	-.160	
	50	6.415	1.161	.126	
GENERAL	51	4.927	1.618	-.230	
	52	5.585	1.360	-.145	
	53	4.525	1.132	-.241	
	54	5.732	1.141	.120	
	55	5.051	1.731	-.077	
	56	4.375	1.612	-.314	T(-2.040).10
	57	4.975	1.702	-.237	

*Variable 12: Mean 1.222; Standard Deviation .485

TABLE 13A

RELATIONSHIP BETWEEN THE OBJECTIVE TO ATTEND THE INSTITUTE AND PREFERRED STUDENT CHARACTERISTICS*

Item No.	Mean	S.D.	Correlation
4	4.357	.958	-.024
5	4.381	.825	.031
6	4.333	.786	.221
8	4.405	1.014	.088
9	4.268	.895	.142
10	4.190	1.194	.043

*Variable 13: Mean 2.833; Standard Deviation 1.591

Table 13B indicates the relationship between two varibales: most important objective to attend the program and student participant ratings. The mean (2.944) indicates that the professors who thought "curriculum" and "education" were important objectives of the program rated higher than did those who thought "method", "goodwill", and "teachers" were important objectives. The same items rated highly on the scale as identified in Tables 1B to 12B. Items 16, engineering degree and less than two years teaching experience, and 17, limited to participants with equal experience in industry, are negatively correlated while Item 49, desire to attend, is positively correlated ($r = -.311$; $r = -.307$; $r = .312$) to the variable--most important objective of the program. Item 48, highly recommended by his principal, is rated high ($M = 6.024$)

TABLE 13B

RELATIONSHIP BETWEEN THE OBJECTIVE TO ATTEND THE PROGRAM AND INDIAN PARTICIPANT RATINGS*

Category	Item No.	Mean	S.D.	Correlation	
	1	4.611	2.453	-.006	
	2	4.024	1.151	-.133	
	3	4.714	1.436	-.171	
	4	4.095	1.340	-.244	
EDUCATION	5	3.357	1.605	.243	
	6	3.500	1.401	.104	
	7	3.667	1.183	.048	
	8	4.487	1.073	-.054	
	9	4.667	1.162	.141	
	10	3.375	1.254	.013	
	11	3.690	2.494	.005	
	12	5.317	1.753	.144	
	13	3.500	1.553	.021	
	14	4.225	1.544	-.081	
	15	4.625	1.295	.653	
EXPERIENCE	16	4.175	1.107	-.311	T(-2.020) .10
	17	4.100	1.215	-.307	T(-1.998) .10
	18	2.475	1.261	.177	H
	19	2.897	1.569	.042	
	20	3.756	1.868	-.087	
	21	2.683	1.695	-.139	L
	22	5.195	1.030	.058	
	23	4.122	1.249	-.202	
	24	5.220	1.194	.226	
	25	3.659	1.622	.205	
ACADEMIC	26	3.634	1.655	.055	
	27	3.800	1.572	.258	
	28	4.875	1.742	-.047	
	29	5.732	1.484	-.090	
	30	4.537	1.598	-.022	
	31	5.488	1.416	.218	
	32	3.825	1.483	-.074	
AGE	33	3.293	1.230	.047	
	34	4.917	1.442	-.009	
	35	4.750	1.296	-.003	
	36	3.528	1.383	-.211	

TABLE 13B, CONTINUED

Category	Item No.	Mean	S.D.	Correlation
	37	4.325	2.018	-.035
	38	4.575	2.062	-.277
	39	5.268	1.803	.171
PROFESSIONAL	40	5.625	1.462	.147
STATUS	41	4.293	1.585	.036
	42	5.300	1.137	.128
	43	5.625	1.176	.031
	44	5.205	1.361	.010
	45	4.341	1.559	-.020
	46	5.854	1.509	-.098
	47	3.195	1.721	.044
	48	6.024	1.313	.087 H
	49	4.854	1.769	.312 T(2.048).05
	50	6.415	1.161	-.127
GENERAL	51	4.927	1.618	-.105
	52	5.585	1.360	.062
	53	4.525	1.132	.133
	54	5.732	1.141	.036
	55	5.051	1.731	.221
	56	4.375	1.612	.153
	57	4.975	1.702	.007

*Variable 13: Mean 2.944; Standard Deviation 1.585

on the scale while Items 18 and 21 (equal teaching experience, and diploma and at least two years of teaching experience) are rated low on the seven-point rating scale (M = 2.683).

Table 14A shows the relationship between two variables: the major the professors had in their degree program to items preferred student characteristics. The mean (2.925) implies that the professors who had majored in civil, electrical and

industrial rated more highly than did the professors who had majored in architecture and mechanical. The same number of items rated highly on the five-point scale as indicated in Tables 1A to 13A.

TABLE 14A

RELATIONSHIP BETWEEN THE MAJOR IN THE DEGREE PROGRAM OF THE PROFESSORS TO PREFERRED STUDENT CHARACTERISTICS*

Item No.	Mean	S.D.	Correlation
4	4.325	.971	.188
5	4.350	.834	.081
6	4.300	.791	.019
8	4.375	1.030	.147
9	4.282	.887	-.104
10	4.150	1.210	.075

*Variable 14: Mean 2.925; Standard Deviation 1.542

Table 14B represents the relationship between two variables: the major the professors had in their degree and Indian participant ratings. The mean (2.829) implies that the professors who had majored in civil, electrical, and industrial rated higher than did the professors who had majored in architecture, math and mechanical. The same number of items rated higher on the seven-point rating scale in Table 14B, as indicated in Tables 1B to 13B. Items 14 (engineering degree and two or more years of teaching experience)

TABLE 14B

RELATIONSHIP BETWEEN THE MAJOR IN DEGREES OF THE AMERICAN PROFESSORS AND INDIAN PARTICIPANT RATINGS*

Category	Item No.	Mean	S.D.	Correlation	
	1	4.629	2.486	-.190	
	2	4.026	1.158	-.101	
	3	4.725	1.432	-.207	
	4	4.025	1.291	-.205	
EDUCATIONAL	5	3.350	1.642	.021	
	6	3.425	1.375	.257	
	7	3.700	1.181	-.013	
	8	4.486	1.096	-.139	
	9	4.700	1.159	.030	
	10	3.342	1.279	.027	
	11	3.575	2.490	-.089	
	12	5.410	1.712	-.190	
	13	3.553	1.572	.023	
	14	4.316	1.526	-.313	T(-1.975).10
	15	4.632	1.324	-.343	T(-2.193).05
EXPERIENCE	16	4.132	1.095	-.297	
	17	4.053	1.207	-.199	
	18	2.526	1.268	-.170	L
	19	2.973	1.572	-.125	L
	20	3.744	1.916	.075	
	21	2.641	1.724	.219	L
	22	5.179	1.048	.264	
	23	4.077	1.244	.233	
	24	5.154	1.182	-.067	
	25	3.590	1.618	-.071	
ACADEMIC	26	3.641	1.662	.186	
	27	3.816	1.574	-.100	
	28	4.816	1.768	.069	
	29	5.744	1.482	-.269	
	30	4.564	1.569	-.031	
	31	5.615	1.310	-.010	
	32	3.763	1.497	.112	
AGE	33	3.231	1.224	.089	
	34	4.824	1.424	.284	
	35	4.676	1.273	-.143	
	36	3.412	1.282	-.316	

TABLE 14B, CONTINUED

Category	Item No.	Mean	S.D.	Correlation	
	37	4.289	2.012	-.226	
	38	4.579	2.113	-.069	
	39	5.231	1.828	-.005	
PROFESSIONAL	40	5.605	1.480	.007	
STATUS	41	4.308	1.625	-.046	
	42	5.316	1.141	-.071	
	43	5.553	1.155	.157	
	44	5.135	1.357	.118	
	45	4.231	1.512	.095	
	46	5.821	1.537	.183	
	47	3.231	1.754	-.024	
	48	6.051	1.337	-.011	
	49	4.795	1.780	.015	
	50	6.385	1.184	.054	
GENERAL	51	4.923	1.645	-.331	T(-2.133).05
	52	5.590	1.352	-.048	
	53	4.474	1.133	-.054	
	54	5.692	1.151	.094	
	55	5.162	1.692	.095	
	56	4.368	1.651	-.159	
	57	5.000	1.740	-.060	

*Variable 14: Mean 2.829; Standard Deviation 1.505

and 15 (engineering degree and less than two years of industrial experience) are negatively correlated (r = -.313; r = -.343) to the major the professors had in their degree program. Item 48, highly recommended from principal, is rated high (M = 6.051) on the scale, while Items 18, 19, and 21 (equal teaching experience, other criteria without regard to previous job experience, and diploma and at least two years teaching experience, respectively) are highly rated on the low scale of the seven-point rating scale (M = 2.526).

III. INTERPRETATION OF PREFERRED STUDENT CHARACTERISTICS

Tables 1A to 14A show means, standard deviations, correlation coefficients, t-tests of items (1 to 17) on student characteristics preferred by American professors. A five-point scale was used.

What are the most desirable traits (Items 1 to 17 in each table) in the opinion of American professors?

Items 1 to 17 shows that the American professors rated beyond point 3 to below 5 on the five-point scale. This indicates that the American professors tend to prefer those qualities indicated at point five on the scale. However, Items 4, 5, 6, 8, 9, and 10 (verbal ability, writing ability, application of ideas, promptness, acceptance by peers, and willingness to ask questions, respectively) are preferred more than other items.

The mean of Item 4 (4.340) implies that American professors prefer students who understand and are capable of explaining verbally rather than students who understand but cannot express ideas verbally. The S.D. (.945) indicates that there is no wide difference of opinion about this item. Referring to Table 2A, the correlation coefficient between the present position of the professors and Item 4, verbal ability, is 4 = .556. The implication is that deans, assistant deans, consultants, and chairmen of departments prefer this

characteristic more than professors, associate professors, assistant professors and lecturers. This is significant at the .01 level.

The mean of Item 5, writing ability, shows that American professors prefer students who understand and are able to express themselves in writing. The S.D. (.805) indicates that there is no wide difference of opinion.

Observing Table 2A, the correlation coefficient between the present position of the professors and writing ability is $r = .394$. This shows that deans, consultants, assistant deans, and department chairmen feel more strongly about Item 5, writing ability, than professors, assistant professors, associate professors and instructors. This is statistically significant at the .05 level, and it indicates that this characteristic has significant value.

Looking at Table 6A, the correlation coefficient between teaching experience of the professors and writing ability, Item 5, is $r = -.326$. This shows that the professors who have had less teaching experience feel more strongly about Item 5 than do professors who have more teaching experience. This is significant at the .05 level.

Pointing to Table 7A, the correlation coefficient between industrial experience and Item 5 (writing ability) is $r = -.287$. This indicates that American professors with less industrial experience feel more strongly about writing ability

(Item 5) than do professors who have more industrial experience.

It seems, therefore, that professors with less teaching or industrial experience feel more strongly that students should have writing ability.

The mean of Item 6, application of ideas, (4.317) shows that the American professors prefer students who understand and whose actions show it rather than students who understand but whose actions do not show it. The S.D. (.789) indicates that there is no wide difference of opinion regarding students having ability to apply ideas. Referring to Table 2A, the correlation coefficient between the present position and Item 6, application of ideas, is r = .311. It indicates that the deans, assistant deans, consultants, and department chairmen feel more strongly that students should have ability to apply ideas than do professors, assistant professors, and instructors.

The mean of Item 8, promptness, (4.418) shows that the American professors prefer students who complete the task on schedule, rather than students who complete the task but seldom on schedule. However, S.D. (1.024) indicates that there is more difference of opinion regarding Item 9 (acceptance by peers) than Items 4, 5, and 6 (verbal ability, writing ability, and application of ideas).

Referring to Table 9A, the correlation coefficient between the location attended by the professors and Item 8

(promptness) is r = .352. This shows that the professors who have been to Dhanbad, Lucknow, Jadavpur, Ahmedabad, Bhopal, and Patna feel more strongly that participants should have ability to apply ideas than the professors who have been to Madras, Banglore, Chandigarh, and Allahabad. These two variables are significant at the .05 level. So it has to be considered as a value for the American professors.

The mean of Item 9, acceptance by peers, (4.300) shows that American professors prefer students who perform well and are liked by peers rather than students who perform well but are not liked by peers. The S.D. (.883) indicates that there is no wide difference of opinion among American professors about students who perform well and get along well with his peers.

Looking at Table 1A, the correlation coefficient between the age of the professors and Item 9 (acceptance by peers) is r = -.370. This shows that the younger professors feel more strongly about students who perform well and are liked by peers than do older professors. These variables are significant at the .05 level. So it has to be considered as a value by American professors.

Observing Table 7A, the correlation coefficient between the industrial experience of the professors and Item 9 (acceptance by peers) is r = -.337. This indicates that the professors who have less industrial experience feel more strongly

about this characteristic than do professors who have more industrial experience. However, these variables are significant at the .05 level, and it should be considered as a value.

The mean of Item 10, willingness to ask questions, (4.220) shows that American professors prefer students who seem to understand and ask questions willingly rather than students who seem to understand but are not willing to ask questions. The standard deviation (1.194) indicates that there is a difference of opinion regarding this item.

Referring to Table 2A, the correlation coefficient between present position and Item 10 (willingness to ask questions) is r = .569. This indicates that deans, assistant deans, consultants, and chairmen of departments feel strongly about students who understand and ask questions than do professors, assistant professors, and associate professors. These variables are significant at the .01 level. So it should be considered a high statistically significant value.

From preferred student characteristics it can be inferred that American professors feel strongly that students should have verbal ability, written expression, ability to apply his ideas, be on time, be liked by his peers, and be willing to ask questions. However, the younger, less experienced professors feel more strongly about these characteristics than do the older professors. These items are statistically significant, so one should consider these

characteristics carefully.

Even though these characteristics are not statistically significant and not related to the Indian participants' ratings, they have significant value. It can be possible that American professors tend to look for these qualities in Indian participants. Secondly, it is most desirable that Indian participants have these qualities that are desirable by American professors, such as writing ability, verbal ability, being prompt, having the ability to apply ideas, being liked by his peers, and asking questions. However, due to traditional classroom teaching, and educational systems in India, most students are not in the habit of asking questions and they might create problems for the professors in the institute program in India. However, it should be carefully considered as a value in institute programs.

IV. INTERPRETATION OF INDIAN PARTICIPANTS CHARACTERISTICS DATA

What are the most desirable educational qualifications (Items 1 to 10 in each table) in the opinion of the American professors about institute participants in India?

The means of Items 1 to 10, diploma as good as a degree, successful in academic subjects, technicians, degree holders only, diploma holders rather than degree holders, degree holders more competent in lab work than diploma holders, diploma holders with honors better than degree holders, degree holders

better than diploma holders, engineering degree holders poor risk, and open to every polytechnic teacher regardless of education, respectively, (3.359 to 4.683) indicate that American professors rated between the point beyond 3 to the point below 5 on the seven-point rating scale. It indicates that American professors tend to reach an agreement positively to educational qualifications of institute participants. However, they do not reach it to the degree of significance to the items recreated by the rest to the category of education. However, the standard deviation (2.473) of Item 7 indicates that there is a wide spread of opinion among American professors about the opinion that participants with diplomas are as good as degree holders for the institute program.

The mean of Item 3, technicians, (4.781) indicates that participants who have experience as technicians are preferable to those with a B.E., B.Sc., or M.Sc. degree with no experience. However, this small difference is not large enough to permit the establishment of the criteria of education.

On the whole there is no significant difference among the items regarding education. It indicates that professors are not in agreement about educational qualifications of institute participants. In fact, the analysis of the polytechnic institute reports indicate that there seems to be a great controversy regarding educational qualifications of the institute participants.

From data analysis it can be inferred that diploma holders are as desirable as degree holders and that technicians are preferable to B.Sc and M.Sc participants. However, it does not support the statement indicated in polytechnic reports that participants should be polytechnically-oriented. In fact, it indicates that further research is needed regarding the educational qualifications and their success in institute programs in India.

From Table 9B, the correlation coefficient between two variables, institute location attended by American professors and Item 1, participants with diplomas being as good as degrees, is $r = -.494$. This indicates that the professors who are assigned to Madras, Banglore, Chandigharh, Allahabad, and Gauhati think more of Item 1, diplomas as good as degree holders, on the seven-point scale, than do the professors assigned to Patna, Bhopal, Ahmedabad, Jadavpur, Locknow, and Dhanbad. These two variables are statistically significant at the .01 level. It can be inferred that this should be considered of value. However, further investigation is needed regarding location assigned to the professors and the educational qualification of the participants, especially about degree and diploma holders.

What is the most desirable experience background (Items 11 to 22 in each table, engineering diploma with some teaching experience, practical experience in industry, engineering

degree and two or more years of industrial experience, two years teaching experience, two or more years industrial expe-irence, less than two years teaching experience, equal expe-rience in industry, limited to equal teaching experience, other criteria, no practical experience in teaching or industry, diploma and two years teaching experience, and diploma and less than two years teaching experience, respectively) in the opinion of the American professors about Indian partici-pants?

The means of the Items 11 to 22 (2.487 to 5.325) indi-cate that the American professors rated between the point beyond 2 to below 6 on the seven-point scale. It indicates that American professors tend to reach an agreement positively and negatively about the experience background of institute participants. However, they tend to reach an agreement more on Items 12 to 17 and 22; and they tend to disagree more on Items 18, 19, and 21 about experience background of the in-stitute participants. The standard deviation (2.486) of Item 11 (engineering degree and some teaching experience) indicates that there is a wide difference of opinion among American pro-fessors regarding participants, even with an engineering de-gree or diploma they should have some teaching experience before attending the institute program.

The mean of Item 12 (5.325) indicates that the American professors tend to reach an agreement positively that

participants should have practical experience in industry regardless of other qualifications. However, this agreement does not support the criteria that has already been established; that participants with a B.S. degree and two years of teaching experience should be admitted in the program. In fact, it supports the statement from the polytechnic reports that participants with practical experience in industry should be admitted in the institute program.

The mean of Item 22 (5.200) indicates that the American professors tend to reach an agreement positively that participants with a diploma and less than two years of teaching experience should be admitted. This agreement supports the polytechnic reports which indicate that participants with diplomas and some teaching experience should be admitted. However, it does not support largely to the established criteria that participants with a B.S. degree and two years teaching experience should be admitted. However, experience in teaching about participants is the important criteria for the institute program.

The mean of Item 18 (2.487) indicates that American professors tend to believe that the polytechnic summer institute should not be limited to those participants with equal teaching experience. Referring to Table 2B, the correlation coefficient between the present position of the professors and Item 18, experience background, is $r = -.466$. This indicates

that the professors, assistant professors and lecturers think more about Item 18, limited to those participants with equal teaching experience, than do deans, consultants, associate deans, and chairmen of the departments. This is statistically significant at the .05 level.

The mean of Item 19 (2.921) indicates that American professors tend to disagree that participants in the polytechnic summer institute should be selected according to other criteria without regard to their previous job experience. In fact, professors agreed that previous job experience should be one of the criteria for the institute participants. This statement supports the polytechnic institute reports that practical experience is needed for institute participants. This statement also supports largely the criteria that has already been established that participants with a B.S. degree and two years of teaching experience is admitted to the institute program.

Referring to Table 9B, the correlation coefficient between the two variables, location attended by American professors and Item 19, is $r = -.313$. This indicates that the professors who have been to Madras, Banglore, Chandigharh, Allahabad, and Gauhati rated higher on the seven-point scale than did the professors who attended Patna, Bhopal, Ahmedabad, Jadavpur, Lucknow, and Dhanbad. These two variables are statistically significant at the .10 level. It can be inferred that there is a value placed on the location assigned to the

professors and the experience background of the participants.

The mean of Item 21 (2.625) indicates that American professors tend to disagree with the statement that participants should have a diploma and at least two years of teaching experience before being admitted. This disagreement does not support the established criteria that participants must have a B.S. degree and two years of teaching experience. It does support the agreement of American professors on Item 22, that participants with a diploma and less than two years of teaching experience should be admitted. This agreement also supports the polytechnic institute reports which have indicated that participants with a diploma and some teaching experience should be admitted.

From data analysis it can be inferred that a participant with a diploma and less than two years of teaching experience should be selected for the institute program in India. Secondly, job experience in teaching or in industry should be considered as of value for the institute participants.

What is the most desirable academic background for Indian participants (Items 23 to 30 in each table; general engineering background; scientific background; only participants with math background; background same as diploma or degree; variety; education background; math background; and knowledge of fundamentals, respectively) in the opinion of the American professors?

The means of the Items 23 to 30 (3.675 to 5.725) indicate that the American professors rated between the point beyond 3 to below 6 on the seven-point scale. This indicates that American professors tend to agree both positively and negatively about the academic background of institute participants. They tend to agree more on Items 24, scientific background, and 29, mathematical background, than other items.

The mean of Item 24 (5.225) indicates that American professors are inclined to agree that only those participants with a scientific background should be selected. Referring to Table 6B, the correlation coefficient between the teaching experience of the American professors and Item 24, only those participants with a scientific background should be selected, is $r = -.483$. That indicates that the professors who have less teaching experience feel more strongly about Item 24 than do professors who have more teaching experience. This is statistically significant at the .01 level.

The mean of Item 29 (5.725) shows that American professors seem to agree that it is essential for participants to have a mathematical background in order to be successful in the summer program. This agreement supports the polytechnic institute reports that participants should have a mathematical background to be successful in the institute program. This item is not statistically significant, however.

The mean of Item 25 (3.700) indicates that American

professors are inclined to disagree that only those participants with a mathematical background should be selected for the summer institute. However, this disagreement is not large enough to permit the establishment of a criteria about academic background of the participants. It indicates that one should not limit the selection of participants only to those with mathematical backgrounds.

Observing Table 5B, the correlation coefficient between the two variables, educational degrees of the professors and Item 25 (only those participants with a mathematical background should be selected) is $r = -.488$. This indicates that the professors who have B.S. and M.S. degrees feel more strongly toward Item 25 than do professors who have Ph.D. degrees.

Referring to Table 6B, the correlation coefficient between the two variables, teaching experience of the professors and Item 25, is $r = .346$. This indicates that the professors who have more teaching experience feel stronger toward Item 25 than do the professors who have less teaching experience. Therefore, it can be inferred that professors who have B.S. degrees and more teaching experience are more concerned about these qualities than professors who have M.S. and Ph.D. degrees and less experience.

The mean of Item 26 (3.634) indicates that American professors do not agree that participants with degrees or diplomas should have the same kind of academic educational

specialization before they are selected to attend the summer institute. Even though this item is not statistically significant, it should be examined carefully from the point of view of the educational system in India. However, the homogeneous group in civil, electrical, or mechanical engineering is more desirable in order to facilitate the course work in institute program.

The mean of Item 27 (3.846) indicates that American professors are inclined to disagree with the statement that it is desirable to have a variety of academic specializations represented among the participants in each polytechnic institute. Referring to Table 5B, the correlation coefficient between educational degrees of professors and Item 27, that it is desirable to have a variety of academic specializations represented among the participants, is 4 = -.487. This indicates that the professors who have B.S. and M.S. degrees feel more strongly about Item 27 than do professors who have Ph.D. degrees.

It can be inferred from this that participants with scientific and mathematical backgrounds should be selected. This agreement is sufficiently significant to permit establishment of a criterion about academic background of institute participants. However, it is a paradox that American professors do not strongly recommend that participants should have an engineering background. Analysis of the polytechnic

reports indicate that there is a wide discrepancy regarding scientific and engineering backgrounds of the participants. The institute program is for polytechnic teachers, and it is normal that the American professors whould prefer to have participants with engineering backgrounds to scientific backgrounds. This controversy still remains unsolved. Further research is needed about the academic background of the participants.

Finally, it is desirable to have homogeneous academic backgrounds among the participants in order to facilitate the courses.

What is the most desirable age of Indian participants (Items 31 to 36 in each table, youth should be given preference, those who have just received a degree and/or diploma, age 20-30, age 30-40, age 40-50, and age has no effect on performance, respectively) in the opinion of the professors?

The means of Items 31 to 36 (3.293 to 5.488) indicate that American professors rated between the point beyond 3 to below 6 on the seven-point scale. American professors seem to agree more on Item 31, and they tend to disagree more on Items 32, 33, and 36 (youth given preference, just received a degree and/or diploma, age 20-30, age has no effect on performance, respectively).

The mean of Item 31 (5.488) indicates that American professors are inclined to agree more that youth should be

given preference over age when selecting participants. This agreement supports the Nady report, in which he indicates that the younger, less experienced should be selected particularly in the light of the sequential program proposed from 1967 forward.

The mean of Item 32 (3.846) indicates that American professors tend to disagree with the statement that participants who have just received a degree or diploma should be selected. This supports the criterion that has been established that participants with a B.S. degree and two years of teaching experience should be admitted. This agreement further supports Item 12 (that participants should have practical experience in industry) and Item 22 (that participants with a diploma and less than two years of teaching experience should be admitted).

Observing Table 9B, the correlation coefficient between the two variables, location attended by professors and Item 32 (selection of participants who have just received a degree and diploma), is r = .334. This indicates that the professors from Jadavpur, Ahmedabad, Bhopal, and Patna feel more strongly about Item 32 than do professors who attended Madras, Banglore, Chandigharh, Allahabad, and Gauhati.

Looking at Table 11B, the correlation coefficient between the two variables, the reasons for going to India and Item 32, is r = -.384. This indicates that the professors

who gave reasons such as "travel", "professional interest", and "service" feel more strongly about Item 32 than do professors who gave such reasons as "salary", "challenge", and "curiosity".

The mean of Item 36 (3.457) indicates that American professors tend to disagree that the participants age has no effect on performance in the summer institute program.

Referring to Table 10B, the correlation coefficient between the two variables, the subject taught by professors in India and Item 36 (age has no effect on performance), is r = -.301. This indicates that the professors who teach civil, mechanical, or electrical engineering think more about Item 36 than do the professors who teach industrial engineering and drafting.

Pointing to Table 14B, the correlation coefficient between the two variables, degree major of the professors and Item 36 (age has no effect on performance) is r = -.316. This indicates that the professors who have mechanical, civil, and electrical degrees think more about Item 36 than the professors who have industrial, architecture, and math as a major.

It can, therefore, be inferred that young participants should be selected, and this should be considered as one criterion for selecting institute participants. Also, age has the effect on the performance in the institute.

What is the most desirable professional status (Items

37 to 44 in each table, entire professional range; polytechnic faculty, not engineering; regular polytechnic teachers; principal; head of department; lecturer; assistant lecturer; and laboratory assistant; respectively) in the opinion of the professors about the Indian participants?

The means of Items 37 to 44 (4.333 to 5.615) indicate that the American professors rated between the point beyond 4 to below 6 on the seven-point scale. It indicates that American professors are inclined to reach an agreement on a higher degree than other categories largely about the professional status of Indian participants.

They tend to agree more on Items 39, 40, 42, 43, and 44 (regular polytechnic teachers; principal; lecturer; assistant lecturer; and laboratory assistant; respectively) than other items in this category.

The mean of Item 39 (5.231) indicates that American professors agree that participants should be polytechnic teachers who regularly teach in polytechnic institutes. This statement supports the analysis of the polytechnic reports which indicated that participants should be polytechnic teachers and polytechnically-oriented. Furthermore, it largely supports the criterion that has already been established that participants with a B.S. degree and two years of teaching experience should be selected. However, even though this statement is not indicated as being statistically significant,

other factors indicate that this should be considered as one of the most important criteria for institute participants.

The mean of Item 40 (5.615) indicates that American professors seem to agree (highly) that principals should be selected as participants for the institute program. Analysis of the polytechnic reports indicate that there is little controversy regarding principals being selected as participants. In fact, observing the educational system of India where the principal is in authority to implement new ideas and change into his school, the principal should be selected as a participant. The standard deviation (1.480) indicates that there is not much difference of opinion among the professors regarding selection of principals as participants.

Referring to Table 1B, the correlation coefficient between the age of the professors and Item 40 about selection of principals for the institute program, is $r = -.416$. This indicates that the younger American professors think more of Item 40 than do the older professors. These variables are statistically significant at the .01 level; so it should be considered as of significant value when establishing criteria.

Looking at Table 6B, the correlation coefficient between the two variables, teaching experience of the professors and Item 40 (selection of principals as participants), is $r = -.282$. This indicates that the professors who have less teaching experience feel stronger about Item 40 than do the

professors who have more teaching experience.

Referring to Table 8B, the correlation coefficient between the two variables, the number of times professors attended the institute program in India and Item 40, is $r = .341$. This indicates that the professors who attended the program more than once feel more strongly about Item 40 than do the professors who attended only once. This is statistically significant at the .05 level. It should be considered as a value when establishing criteria for institute participants.

Finally, it can be inferred that the younger, less experienced professors who attended the program more than twice felt that principals should be selected as participants more often than the older, more experienced professors who attended the program only once.

The mean of Item 42 (5.282) indicates that American professors tend to agree that lecturers should be selected for the institute program. In fact, this statement supports the analysis of polytechnic reports, which indicate that the entire range of the profession should be represented.

Referring to Table 9B, the correlation coefficient between the location to which the professors were assigned and Item 42 (that lecturers should be selected), is $r = -.413$. This indicates that the professors who were assigned to Madras, Banglore, Chandigarh, Allahabad, and Gauhati think more of

Item 42 than do professors who were assigned to Jadavpur, Ahemedabad, Bhopal, and Patna. This is statistically significant at the .01 level. Hence, it should be considered as a value when establishing criteria about professional status of the institute participants.

The mean of Item 42 (5.615) indicates that American professors agree highly that assistant lecturers should be selected for institute programs. This statement further supports the analysis of the polytechnic reports that the entire range of the profession should be represented. Referring to Table 2B, the correlation coefficient between the two variables, present position of the professors and Item 43 (that assistant lecturers should be selected), is r = .303. This indicates that the deans, consultants, assistant deans, and department chairmen feel more strongly about Item 43 than do professors, assistant professors, and lecturers.

The mean of Item 44 (5.184) indicates that American professors agree that laboratory assistants should be selected for the institute program. This statement further supports the analysis of polytechnic reports that the entire range of the profession should be represented. Referring to Table 2B, the correlation coefficient between the two variables, present position of the professors and Item 44 (that laboratory assistants should be selected), is r = .412. This indicates that the deans, consultants, assistant deans, and department

chairmen feel more strongly about Item 44 than do professors, assistant professors, and lecturers. This is statistically significant at the .10 level; so it should be considered as of value when establishing criteria for institute participants.

Referring to Table 6B, the correlation coefficient between the teaching experience of the professors and Item 44 is r = -.309. This shows that the professors who have less teaching experience think stronger about Item 44 than do professors who had more teaching experience. These two variables are statistically significant at the .05 level; so it should be considered as of significant value when establishing criteria for institute participants.

Thus, it can be inferred that teaching regularly in polytechnic schools should be considered as one of the important criteria for selecting institute participants. Principals, lecturers, assistant lecturers, laboratory assistants should be selected for the institute program.

What are the most desirable general characteristics (Items 45 to 57 in each table; willingness to work; equal experience background; command of English language; highly recommended by principal; desire to attend; already attended past institutes; have not attended summer institutes; several from single institute; different institutes represented by each participant; capacity to change; leadership capabilities; screened for desirable personality characteristics; relation

of family background to their commitment to teach in polytechnic schools; respectively) in the opinion of the professors about Indian participants?

The means of Items 45 to 57 (3.225 to 6.025) indicated that American professors rated beyond 3 to below 7 on the seven-point scale. This indicates that American professors seem to reach an agreement positively and negatively regarding the miscellaneous characteristics about Indian participants. Items 46, 48, 51, 53 and 56 are highly agreeable; and Items 47 and 47 are disagreeable to the American professors.

The mean of Item 46 (5.825) indicates that American professors agreed that all participants should be of equal experience, educational background, and professional status. This statement also supports the analysis of polytechnic institute reports and the statement of Professor Willson that participants should have equal experience, educational backgrounds, and be polytechnically-oriented. Referring to Table 3B, the correlation coefficient between the institutions attended by American professors and Item 46 (about participant having equal experience, educational backgrounds, and professional status), is $r = -.396$. This indicates that the professors from public institutions marked higher on the seven-point scale than did professors from private institutions. These two variables are statistically significant at the .05 level.

Looking at Table 4B, the correlation coefficient between the college attended by the American professors and Item 46 is r = -.358. This shows that the professors from engineering, technology and architecture are more definite about Item 46 than are professors from arts, science, and mathematics. These two variables are significant at the .05 level.

Referring to Table 7B, the correlation coefficient between industrial experience and of the professors and Item 46 is r = -.397. This indicates that the professors who have less industrial experience feel more strongly about Item 46 than do professors who have more industrial experience. These two variables are significant at the .05 level.

Therefore, it can be inferred that all participants should have equal experience, education, and professional status. This does not support the statement in the polytechnic reports that the entire range of the profession should be represented. In any event, homogeneous grouping is an essential criterion for selecting institute participants.

The mean of Item 48 (4.050) indicates that American professors agreed strongly that participants should be highly recommended by their principals. Referring to Table 2B, the correlation coefficient between the present position of the professor and Item 48 is r = .338. This is interpreted to mean that deans, assistant deans, consultants, and chairmen of the departments think more of Item 48 than do professors,

assistant professors, associate professors, and lecturers. Even though this item is not indicated as being statistically significant, it should be considered as one important criterion for the institute program since this is a program related to change to new methods in a cross-cultural situation.

The mean of Item 47 (3.292) indicates that American professors are not agreed that participants should have command of English in order to be admitted to the institutes even though the analysis of polytechnic reports indicates that command of English should be one of the criteria for selecting institute participants. Looking at Table 2B, the correlation coefficient between the present position of the American professors and Item 47 is r = -.318. This indicates that professors, associate professors, and assistant professors feel stronger about Item 47 on the seven-point scale than do deans, consultants, chairmen of departments, and lecturers.

Referring to Table 5B, the correlation coefficient between educational degrees of the professors and Item 47 is r = -.294. This indicates that the professors who have a B.S. degree think more of Item 47 than do professors with M.S. and Ph.D. degrees.

Looking at Table 8B, the correlation coefficient between the two variables, the number of times the professors attended the institute program and Item 47, is r = -.363. This indicates that the professors who attended the program

once feel more strongly about Item 47 than do professors who attended the program more than once.

Finally, it can be inferred that the professors, assistant professors, and lecturers with a B.S. degree and who attended the program once feel more strongly that participants should have command over English than do professors in higher positions who attended the program more than once.

The mean of Item 50 (6.400) indicates that American professors are inclined to think that participants who have already attended a summer polytechnic program should be allowed to attend future summer institute programs. This statement supports the analysis of the polytechnic institute reports.

The mean of Item 52 (5.575) indicates that American professors tend to agree that several participants should be selected from a single institution to attend the same summer institute program. However, this statement does not support the analysis of the polytechnic reports.

The mean of Item 55 (5.725) indicates that American professors agree that the leadership capability of each participant should be ascertained before being admitted to the program. Referring to Table 8B, the correlation coefficient between the two variables, number of times of attendance in the program and Item 55 (that leadership quality should be ascertained), is $r = .522$. This indicates that the professors who attended the program more than once seemed to think that

leadership quality should be ascertained more than do the professors who attended the program only once. These two variables are significant at the .01 level; it may be considered as of high value when establishing criteria.

Looking at Table 10B, the correlation coefficient between the subject taught by professors in India and Item 55, is r = -.292. This indicates that the professors who teach civil, mechanical, and electrical engineering feel more strongly that leadership quality should be ascertained than do professors who teach industrial and drafting. These variables are significant at the .01 level, and it should be considered as a value when establishing criteria.

It can be inferred, therefore, that the professors who attended the program more than once and who teach civil, mechanical, and electrical engineering are inclined to think that leadership quality should be ascertained. This is probably associated with the realization of the nature of the change program and the need for teachers with leadership qualities.

The mean of Item 56 (5.079) indicates that American professors feel more strongly that all participants should be screened prior to admission to ascertain desirable personality characteristics. This statement supports the analysis of polytechnic institute reports.

V. DISCUSSION OF THE FINDINGS

1. From analysis of data it is indicated that diploma and degree holders in engineering, B.S. and M.S. from science colleges, and technicians should be admitted in the institute program. Even though the polytechnic institute program is for polytechnic teachers, the evidence does not support that only polytechnic teachers with diplomas are admitted. It was noted that mostly diploma holders in India are trained in polytechnic schools, while degree holders are trained in engineering colleges and B.S. and M.S. degree holders are educated in the science colleges; therefore, the only difference between diplomas and degrees are in the level of courses. Hence, the qualifications of the institute participants and their success in the institute program should be examined carefully.
2. It was indicated by the American professors that participants with less than two years of teaching experience or industrial experience should be considered as a criteria for the institute participants. Relating to the industrial situation in India, it will be difficult to obtain participants who had experience in industry and still

are interested in teaching in polytechnic schools. Secondly, it may be easier to obtain participants with teaching experience in polytechnic schools, but difficult to obtain teachers who have had laboratory experience, who can grasp methods in polytechnic fields easily and implement it in their schools. The reasons are many. for example, lack of facilities in the polytechnic schools and lack of finances in India. However, it is a fact that job experience in teaching or in industry is an important criterion and should be considered as a value.

3. It was indicated by the American professors that young participants should be given preference over age. It is an important criteria one should consider for institute participants when one selects participants for the institute program. However, examining the educational system in India, one should notice that the people who are in higher positions, such as principals, professors and department heads have more opportunity to implement change, and introduce new ideas and new methods in the polytechnic schools than lecturers, laboratory assistants and others. If the

younger participants will be given an opportunity to attend institute programs and if they will not get an opportunity to implement their ideas which they have learned in their program, then a great waste of human efforts will result.

4. It was indicated by American professors that polytechnic teachers who teach regularly should be selected. It was also indicated that principals, lecturers, and laboratory assistants should be selected. Therefore, it is desirable that the entire range of profession should be represented. But what about the polytechnic factor which creates conflicts among participants due to professional status? Status conscious principals and professors are going to affect the morale of other participants who are lecturers and laboratory assistants.
5. It was indicated by American professors that participants should be highly recommended by polytechnic principals. The problem arises in evaluation. How accurate can the principal assess the leadership quality of participants, their capacity to change, and their adaptability in cross-cultural situations? Subjective evaluation by the principal is prone to affect his recommendations.

6. It was indicated by American professors that the leadership qualifications of the participants should be ascertained. Recent procedure for the selection of institute participants indicates the difficulty in ascertaining the leadership qualities of the participants due to lack of systematic observation or objective tests. And, in addition, the interview technique is not widely accepted in India. Neither has an objective instrument that can measure the leadership quality of the teachers been developed.
7. It was indicated by American professors that personality characteristics of the participants should be ascertained. However, a valid instrument has not been developed that can measure the personality characteristics of the Indian institute participants. Interview techniques are not widely employed by APTI in the selection of the participants. Furthermore, it is difficult to assess personality characteristics of the participants who can be successful in cross-cultural situations. Participants who may have personality characteristics to succeed in Indian situations may not be successful in cross-cultural situations. The attitude of the participants to the

situation and to the American professors is found to place a limitation on identification of personality characteristics.

8. It was indicated by the American professors that participants should be screened to ascertain the desirable qualities of the students. However, apart from application forms, there is no other procedure that has been used to screen the institute participants. It may be possible that APTI may find it difficult and expensive to introduce other techniques for screening the participants such as interviewing. As institute programs last eight weeks and are held during summer vacation, they might interrupt the schedule of the Indian participants; therefore, it may be difficult to obtain well-motivated participants by APTI.

VI. CONCLUSIONS

From the data analyzed, the following criteria have been established:

1. Diploma and degree holders in engineering should be admitted in the polytechnic institute program.
2. Technicians, B.Sc. and M.Sc. degree holders should be admitted in the institute program.

3. Diploma or degree holders with less than two years of teaching experience should be admitted in the institute program.
4. Diploma and degree holders with less than two years of industrial experience should be admitted in the institute program.
5. Participants with scientific backgrounds should be admitted in the program.
6. Participants with mathematical backgrounds should be admitted in the institute program.
7. Young participants should be given preference to older participants.
8. Principals, lecturers, assistant lecturers, and laboratory assistants should be admitted to the program.
9. Participants should come from different polytechnic institutions.
10. Participants should be highly recommended by their principals.
11. Participants who are assigned to a specific institute in India should, with equal education, experience, be homogeneous in education, teaching and work experience, and professional status.
12. Participants' leadership quality should be ascertained before entering the program.

13. Participants should be screened prior to entering the program to ascertain desirable personality characteristics.

VII. RECOMMENDATIONS

1. These criteria are recommended to APTI for implementing selection eligibility of the institute participants in spite of limitations that have been indicated before.
2. It is recommended to APTI to make follow-up, longitudinal studies of the participants who have been through institute programs. It should be investigated by research workers in the field of education to find out how far these participants had implemented new methods and techniques into their schools.
3. It is recommended to APTI that research is needed about the effect of polytechnic institute programs on education systems, polytechnic teachers, and industry in India.
4. It is recommended to APTI that research is needed about the selection of Indian participants according to the Indian coordinators' point of view.

5. It is recommended to APTI that research is needed about innovation, curriculum, and methods regarding polytechnic education in India.
6. It is suggested to APTI to make use of participants who have already received short term professional education in the institute program to conduct in-service programs into their own schools to pass the new knowledge and techniques to other teachers.
7. It is suggested that research is needed about the kind of American professors who will succeed in cross-cultural situations.
8. It is recommended to APTI that research is needed about the courses, training and skills that can be beneficial to Indian participants from American educators.
9. It is recommended to USAID that further research is needed in selecting polytechnic educators who have been sent abroad in cross-cultural situations.
10. It is recommended to USAID that research is needed in the field of innovation, and new methods that specially can be used to develop further their knowledge in technical education, to further good relationship between two countries.

VIII. SUMMARY

This chapter presents the analysis and interpretations of data about Indian participants and preferred student characteristics. Tables 1A to 14A indicate the analysis of preferred students' characteristics. Tables 1B to 14B indicate means, standard deviations, coefficient correlations, and t-tests about Indian participants ratings in six categories.

Regarding preferred students' characteristics, American professors prefer to have students with verbal ability and writing skill who are prompt, can apply ideas, and are willing to ask questions.

Data analysis revealed that American professors are not in agreement about the educational qualification needed by institute participants. However, they agree that participants with diploma or degrees in engineering, technicians, B.S. or M.Sc. and less than two years of teaching experience or in industry should be admitted to the institute program. They also agreed that participants with scientific and mathematical backgrounds should be admitted, that young participants should be given preference over age, and that participants should be highly recommended by their principals. They further agreed that participants should be screened to ascertain personality traits and leadership qualities before admitting them to the institute program.

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APPENDIX A

Number 00089

TO: American professors who have taught in the Polytechnic Institute in India

As one who has worked in the summer polytechnic program in India you will understand the need for establishing more definite criteria for selecting Indian participants for future institutes. The two attached questionnaires are designed to do this.

Please check the appropriate responses, and return both questionnaires in the enclosed envelope. Your responses will be kept strictly confidential.

Will you please take a few minutes from your busy schedule to cooperate with us? Your participation is necessary if valid criteria are to be identified. Your efforts will be appreciated a great deal.

If you wish to receive the results of the study, please indicate this by checking here ☐ .

Yours very truly,

Premila H. Vyas

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Number 00089

PERSONAL INFORMATION SHEET

The following information is needed to help interpret your responses to the attached questionnaire. Even though your name is attached so that the analysis can be more complete, you may be sure that your responses will be kept confidential.

Please respond to each item:

NAME:_____ AGE:_____
Last Name First Middle

PRESENT ADDRESS:_____
Street City State Zip Code

PRESENT POSITION:

			Job Description	
Institution	Pub or Priv	College Of?	Sub. Taught In Class	Kinds of Lab Instr.

EDUCATION:

College Degree(s)	Major	Minor(s)	Institution	Pub or Priv	Date of Degree

EXPERIENCE: (Omit Polytechnic Summer Institutes in India)

	No. of Years		Kinds of Experience	
	Sch.	Coll.	Subject(s) Taught or Work Exp.	Where?
Teaching			1._____	_____
			2._____	_____
			3._____	_____

	No. of Years		Kinds of Experience	
	Sch.	Coll.	Subjects Taught or Work Exp.	Where?
Industrial			1._____ 2._____ 3._____	_____ _____ _____

EXPERIENCE IN POLYTECHNIC INSTITUTE IN INDIA:

Attended	Location of Assignment	What did you teach? Civil	Mech.	Elect.	Indus.
1964__	_____	____	____	____	____
1965__	_____	____	____	____	____
1966__	_____	____	____	____	____

1. What factors influenced your decision to go to India?

2. Do you want to go again? If so, why? If not, why?

3. What would you consider to be the most important objectives of the summer institute in India?

Visualize an ideal American student--probably one from some class you have taught. Rate him on each of the following traits which are described by words or phrases defining the extremes of the scale. In rating the student you should attempt to evaluate him against other students in general.

Example: If you feel the ideal student is very well described by one end of the scale or the other, place a check mark (X) on the number nearest the appropriate end, e.g.

Talks noticeably more than other students in all kinds of situations.	X 2 3 4 5	Is quieter than most students.

If you feel the student is somewhat better described by one end of the scale than the other, place a check mark on the second number from the appropriate end.

Achieves well after stimulation.	1 2 3 X 5	Achieves well without stimulation.

If you cannot decide between alternatives, or if you feel the student should be rated about half-way between the two extremes, place your check mark (X) on the middle number, 3.

Gets work done, but plays and jokes a lot.	1 2 X 4 5	Gets work done in a serious business-like manner.

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1. Works irregularly but gets the job done on time	1 2 3 4 5	Works at an even pace while finishing the job on time
2. Grasps new concepts if allowed sufficient time	1 2 3 4 5	Grasps new concepts immediately upon their presentation
3. Is different from other students in appearance and action	1 2 3 4 5	Looks and acts like most other students
4. Understands but cannot express his ideas verbally	1 2 3 4 5	Understands and is capable of explaining verbally
5. Understands but cannot express in writing	1 2 3 4 5	Understands and is able to express it in writing

6.	Understands but actions do not show it	1 2 3 4 5	Understands and actions show it
7.	Prefers not to work with hands	1 2 3 4 5	Prefers to work with hands
8.	Completes the task, but seldom on schedule	1 2 3 4 5	Completes the task on schedule
9.	Performs well but it is not liked by peers	1 2 3 4 5	Performs well, liked by peers
10.	Seems to understand but does not ask questions willingly	1 2 3 4 5	Seems to understand and does ask questions willingly
11.	Can be depended upon to follow set routine exactly	1 2 3 4 5	Likely to devise some change in the routine
12.	Seeks activities that require familiar responses	1 2 3 4 5	Seeks activities that require new responses
13.	Makes decisions advantageous to self	1 2 3 4 5	Makes decisions that reflect awareness of others
14.	Works best alone	1 2 3 4 5	Works best with others
15.	High need for external rewards	1 2 3 4 5	Is satisfied with intrinsic reward
16.	Personal goals have not yet been fixed	1 2 3 4 5	Seems to know exactly where he is going
17.	Actions vary as to status of persons present	1 2 3 4 5	Actions consistant regardless of who is present

APPENDIX B

Number 00089

FORM FOR RATING THE INDIAN PARTICIPANT

In this questionnaire you are asked to give your opinion about things that have been suggested by you and other American professors who have worked in India as being important to consider when selecting the Indian participants for the Polytechnic[1] Summer Institutes in India.

Each item on the inventory should be judged on a scale of seven ratings. The respective ratings are given below. Mark an "X" on the number to indicate the rating of your choice.

No, Never	Almost Never	Usually not, Infrequently	Sometimes Yes and No	Usually Yes, Frequently	Almost Always	Yes, Always
1	2	3	4	5	6	7

Please respond to each item.

EDUCATION

1. A summer polytechnic institute participant with a diploma[2] is as good as one with a degree.[3]	1 2 3 4 5 6 7
2. The polytechnic institute program should be restricted to participants who have performed successfully in academic subjects.	1 2 3 4 5 6 7
3. Participants who have experience as technicians[4] are preferable to those with B.E., B.Sc. or M.Sc. degree with no experience.	1 2 3 4 5 6 7
4. Participants for the polytechnic program should be selected from degree holders only.	1 2 3 4 5 6 7

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[1]Polytechnic: the term "Polytechnic" represents in India today, technical institutions that conduct diploma courses as distinguished from degree courses chiefly in civil, mechanical, and electrical engineering.

[2]Diploma: These courses require three years after higher secondary education, and they have strong practical bias. (Diploma courses occupy an important position in technical education in India.)

[3]Degree: (B.E.) These courses require five years after higher secondary education.

[4]Technicians: Generally, the supervisory personnel in industry or office whose practical skill enables them to appreciate the problems of the skilled worker and whose theoretical training enables them to understand the ideas of the engineer or executive and to interpret them to the skilled worker.

5.	It is better to select diploma holder teachers in polytechnic schools to attend the polytechnic institute program than degree holders teaching in the same kind of schools.	1 2 3 4 5 6 7
6.	Participants with a B.E. degree are more competent in handling laboratory work in the same institute than participants with a diploma.	1 2 3 4 5 6 7
7.	Diploma holders with honors[5] are better summer institute participants than degree holders.	1 2 3 4 5 6 7
8.	Participants with a degree are better qualified for the program than participants with a diploma.	1 2 3 4 5 6 7
9.	Participants with engineering degrees tend to be poor risks in the polytechnic institute summer program.	1 2 3 4 5 6 7
10.	The Polytechnic summer institute should be open to every polytechnic school teacher without regard to any qualification.	1 2 3 4 5 6 7

EXPERIENCE

11.	The participant, even with an engineering degree or diploma, should have some teaching experience before attending the summer polytechnic institute program.	1 2 3 4 5 6 7
12.	Regardless of other qualifications, the participant should have practical experience in industry before being allowed to attend the summer polytechnic institute program.	1 2 3 4 5 6 7
13.	Participants with engineering degrees and two or more years of industrial experience should be selected for the polytechnic institute program.	1 2 3 4 5 6 7

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[5]Diploma holder with honors: These students have 60 or more total average in their required courses.

14. Participants with engineering degrees and two or more years of teaching experience should be selected for the polytechnic institute program. 1 2 3 4 5 6 7

15. Participants with engineering degrees and less than two years of industrial experience should be selected for the polytechnic institute program. 1 2 3 4 5 6 7

16. Participants with engineering degrees and less than two years of teaching experience should be selected for the polytechnic institute program. 1 2 3 4 5 6 7

17. The polytechnic summer institute should be limited to those participants with equal experience in industry. 1 2 3 4 5 6 7

18. The polytechnic summer institute should be limited to those participants with equal teaching experience. 1 2 3 4 5 6 7

19. Participants in the polytechnic summer institute should be selected according to other criteria without regard to their previous job experience. 1 2 3 4 5 6 7

20. Participants without any practical experience in teaching or industry should be admitted to the summer polytechnic institute program. 1 2 3 4 5 6 7

21. Participants with a diploma and at least two years of teaching experience should be admitted to the summer polytechnic institute program. 1 2 3 4 5 6 7

22. Participants with a diploma and less than two years of teaching experience should be admitted to the polytechnic summer institute. 1 2 3 4 5 6 7

ACADEMIC

23. Participants, even with degrees or diplomas, should have general engineering educational background before attending the summer polytechnic institute program. 1 2 3 4 5 6 7

24. Only those participants with a scientific background should be selected for the summer institute. 1 2 3 4 5 6 7

25. Only those participants with a mathematical background should be selected for the summer institute.	1 2 3 4 5 6 7
26. Participants with degrees or diplomas should have the same kind of academic educational specialization before they are selected to attend the summer institute.	1 2 3 4 5 6 7
27. It is desirable to have a variety of academic specializations represented among the participants in each polytechnic institute.	1 2 3 4 5 6 7
28. Educational background should be considered when selecting participants for the polytechnic institute.	1 2 3 4 5 6 7
29. It is essential that participants have a mathematical background in order to be successful in the summer program.	1 2 3 4 5 6 7
30. Participants should be admitted only to those courses in which they have knowledge of the fundamentals involved.	1 2 3 4 5 6 7

AGE

31. In general, youth should be given preference over age when selecting participants.	1 2 3 4 5 6 7
32. Participants who have just received a degree or diploma should be selected for the summer polytechnic program.	1 2 3 4 5 6 7
33. 20 - 30	1 2 3 4 5 6 7
34. 30 - 40	1 2 3 4 5 6 7
35. 40 - 50	1 2 3 4 5 6 7
36. The participant's age has no effect on performance in the summer institute program.	1 2 3 4 5 6 7

PROFESSIONAL STATUS

37.	Participants should represent the entire professional range from principal to laboratory assistant.	1 2 3 4 5 6 7
38.	Participants should be selected from a polytechnic faculty and not from an engineering (college) faculty.	1 2 3 4 5 6 7
39.	Participants should be polytechnic teachers who regularly teach in polytechnic institutes.	1 2 3 4 5 6 7

The following employee of an Indian Polytechnic Institute should be selected as a participant in the summer institute.

40.	Principal	1 2 3 4 5 6 7
41.	Head of a department	1 2 3 4 5 6 7
42.	Lecturer	1 2 3 4 5 6 7
43.	Assistant Lecturer	1 2 3 4 5 6 7
44.	Laboratory Assistant	1 2 3 4 5 6 7

GENERAL

45.	The participant's willingness to work in the summer program is more important than his qualification or rank.	1 2 3 4 5 6 7
46.	All participants should be of equal experience, educational background, and professional status.	1 2 3 4 5 6 7
47.	Participants should have command of English in order to be admitted to the institute.	1 2 3 4 5 6 7
48.	A participant should be highly recommended by his principal.	1 2 3 4 5 6 7
49.	Only those participants who have the desire to attend the summer program should be selected.	1 2 3 4 5 6 7

50.	A participant who has already attended a summer polytechnic program should be allowed to attend future summer programs.	1 2 3 4 5 6 7
51.	Preference should be given to participants who have not attended a summer polytechnic institute.	1 2 3 4 5 6 7
52.	Several participants should be selected from a single institution to attend the same summer polytechnic institute program.	1 2 3 4 5 6 7
53.	Participants should be selected so that different institutions are represented in the same summer institute program.	1 2 3 4 5 6 7
54.	The capacity of the participant to change should be ascertained before being admitted to the summer program.	1 2 3 4 5 6 7
55.	The leadership[6] capabilities of each participant should be ascertained before being admitted to the summer program.	1 2 3 4 5 6 7
56.	All participants should be screened prior to admission to ascertain desirable personality characteristics.	1 2 3 4 5 6 7
57.	All participants should be screened to establish the relationship of their family background to their commitment to teach in polytechnic schools.	1 2 3 4 5 6 7

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[6]Leadership: As used here, a leader is looked upon by members of his group for guidance and direction in completing the job assignment.