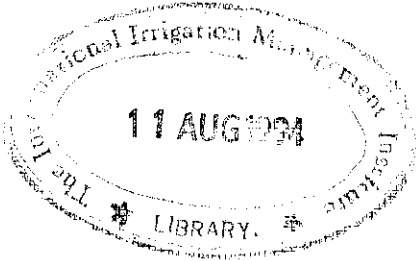


Irrigation Management Training for Institutional Development

A Case Study from Malaysia



Zenete Peixoto França

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INTERNATIONAL IRRIGATION MANAGEMENT INSTITUTE

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Acronyms and Abbreviations

CCS	Crop-cutting surveys
CIITR	Center for International Irrigation Training and Research
DID	Department of Irrigation and Drainage (Malaysia)
DOA	Department of Agriculture (Malaysia)
EDI	Economic Development Institute (World Bank)
HRD	Human Resources Development
ICID	International Commission on Irrigation and Drainage
ID	Irrigation Department (Sri Lanka)
IIMI	International Irrigation Management Institute
INTAN	National Institute for Public Administration (Malaysia)
KADA	Kemubu Agricultural Development Authority
MADA	Muda Agricultural Development Authority
MARDI	Malaysian Agricultural Research and Development Institute
MIS	Management Information System
NGT	Nominal Group Technique
NWMTC	National Water Management Training Center (Malaysia)
O&M	Operation and maintenance
TNA	Training Needs and Organizational Constraints Assessment
UNDP	United Nations Development Programme
UPM	Universiti Pertanian Malaysia
USAID	United States Agency for International Development
WASH	Water and Sanitation for Health Project

Foreword

IT HAS BEEN stated that, whilst vast sums of money have been invested in engineering works for irrigation and drainage, only minimal investment has been made in developing the most important resource, the people who operate, maintain and use the systems once they have been constituted. Long-term training strategies are essential to ensure that a permanent system is established within an agency to develop staff skills and managerial capabilities. The document entitled *Guidelines for Preparing the Strategies and Programs for Public Sector Irrigation Training*, produced by the Economic Development Institute of the World Bank and the United States Agency for International Development in 1989, highlights and elaborates on the need for a systematic approach towards this end.

In March 1989, the Department of Irrigation and Drainage of the Government of Malaysia invited the International Irrigation Management Institute (IIMI) to review its existing training programs, with special emphasis on improving the irrigation management component. This collaborative effort, which started in October 1989, is a clear attempt to address the subject of irrigation management through a well-structured and systematic development program involving all levels of irrigation personnel within the organization. Initially, starting with an extensive training needs assessment, a training plan was developed together with a curriculum in response to the needs of each category of personnel. Selected trainers were trained in April 1991, leading to finalization of course curricula. Training courses have since been conducted, starting in October 1991. They were targeted initially at irrigation technicians, followed by engineers, and subsequently extended to other categories of irrigation service personnel.

The above process is already showing positive results on the ground and managers have become aware of the importance of irrigation management training and how it can enhance operation and maintenance performance in irrigation. Such systematic approaches are also relevant for application in other functions of the Department.

I would like to take this opportunity to thank IIMI for supporting this program. A special record of appreciation must go to Dr. Zenete Peixoto França, IIMI's Training Specialist, and her team for their commitment and enthusiasm throughout the program.

I must congratulate Dr. Zenete França further for documenting those efforts in a specific case study, as contained in this book. I am sure it will prove to be an extremely useful reference in the future, not only to those interested in irrigation management training, but also to those concerned with the training of managers in general.

Dato Ir. Shahrizaila bin Abdullah
Director General
Department of Irrigation and Drainage
Government of Malaysia

Preface

DEFICIENCIES IN MANAGEMENT are considered to be a major cause of the generally acknowledged failure of irrigation schemes to produce the expected benefits in terms of improving productivity, equity, sustainability and the quality of life of farmers in third-world countries.

One of the main reasons for this is the lack of managerial skills among professional staff in irrigation organizations. The training and development of irrigation managers thus becomes an important activity which can help to develop and improve their skills for better performance of irrigation systems and increase awareness of organizational needs for strategic planning and its human resources development (HRD) component. The HRD policies and strategies, including training and development, should be integrated with, and support, the overall strategic direction of the organization. The issue of how to encourage policymakers and managers responsible for irrigated agriculture to become interested in management training has thus become very important.

Conscious of these problems, the Economic Development Institute of the World Bank (EDI) and the United States Agency for International Development (USAID), in a joint effort, prepared draft guidelines in 1987 for devising strategies and programs for irrigation training in the public sector. These were discussed during a seminar organized by EDI and the Centre for International Irrigation Training and Research (CIITR) which took place in Melbourne, Australia, from 6 to 16 March 1989. The seminar, which was attended by senior irrigation managers from various developing countries, aimed to assess the value of the guidelines and their suitability for use in formulating training programs and strategies for irrigation organizations.

As a result of discussions which took place during this seminar, the Director General of the Department of Irrigation and Drainage (DID) in Malaysia invited the International Irrigation Management Institute (IIMI) to collaborate in planning and implementing training activities which would improve DID staff capabilities in irrigation management and encourage them to develop commitment and motivation to respond both to the needs of the DID itself and to those of the farmers it aimed to serve.

This book provides a step-by-step description of the implementation of IIMI's management training strategy at DID from 1989 to 1992. It aims to encourage irrigation managers, researchers and trainers in other countries to participate in and support management training and development in their own organizations, and to apply the IIMI approach — or create similar approaches — in promoting a better understanding of organizational needs among irrigation professionals, to develop their commitment and obtain effective results.

The results of this experience in Malaysia were very satisfactory. The management training strategy proposed by IIMI, which incorporated appropriate elements of the EDI and USAID guidelines, brought the entire DID organization together, involving managers at all levels in the process of assessing training needs and identifying organizational constraints. It helped them to reflect on the goals and objectives of the organization, and influenced the implementation of a human resources development plan for DID; helped to strengthen the irrigation management capacity of DID and other national irrigation institutions through the training of trainers; assured effective training results through the provision of training modules; and emphasized the need for the evaluation of training results to measure the effectiveness of training efforts.

In addition, it must be emphasized that the design and implementation of such a program can only be successful if staff involved in management training — especially foreign trainers — are aware of the need to develop appropriate attitudes towards program participants from all levels of the organization concerned. They must demonstrate their commitment to implementing all phases of the program and to achieving good results through active participation by national staff. They must be responsive to the participants' questions and feelings; give recognition when appropriate; exhibit trust in the capabilities of the participants; motivate and encourage participation; help them to develop confidence in their own ability to find solutions to pressing problems; and generally take a leading role in the program.

The experience in Malaysia was successful because DID staff from all levels of the organization were taken into account and were invited to participate and to take a lead in the activities. The main role of the IIMI training team was to assist them to discover their own potentialities and abilities. In summary, the Malaysians did the job and learned about their own potential in doing so. The training team that worked on this exercise comprised two main groups, namely, IIMI staff members and consultants, and staff from DID and other Malaysian organizations, working under the direction of Dato Ir. Haji Shahrizaila bin Abdullah, Director General of DID.

The IIMI team was led by the author of this book, the IIMI Training Specialist, Dr. Zenete Peixoto França. She was assisted throughout the exercise by Dr. P.S. Rao, formerly Senior Irrigation Management Specialist at IIMI. An IIMI Associate Expert, Mr. Charles Nijman, also participated extensively in the exercise, making important contributions, in particular, to the development of the Analytical Framework for Irrigation Management and the preparation of discussion papers. Dr. Andre Kampfraath, Managing Director of the Management Research Center in the Netherlands, participated on several occasions, notably in the planning and implementation of the training needs assessment.

Other members of IIMI international staff who contributed to the program at various times were Mr. Charles Abernethy, former Director, Programs who acted as a resource person in several stages of the training cycle; Dr. Alfredo Valera, Irrigation Specialist, who participated in the workshop for preparation of the training plan; and Mr. Khalid Mohtadullah, Director for Research, who contributed to the strategic planning process together with Dr. David Constable, the then Program Director of the Centre for International Irrigation Training and Research (CIITR) Melbourne, Australia.

More than 500 staff from DID and other organizations in Malaysia were involved in various stages of the training cycle and in the elements of the program concerned with

strategic planning, human resources development and the training of irrigation researchers. Those who participated throughout the exercise as full members of the training team were Mr. Nik Ariff bin Sulaiman and Mr. Mohammed Azahari bin Ghazali, DID trainers in Kota Bharu.

Other members of DID staff who provided significant support at various stages were: Mr. David Welch, former Deputy Director General; Mr. Ooi Choon Ann and Mr. Rahmat bin Haji Mohammed Shariff, both former Directors of Training; the present Director for Training, Mr. Ahmad Fuad bin Embi; Mr. Cheong Keng Ying, former Principal of the DID Training Centre in Ampang; Mr. Teh Siew Keat, Director, River Engineering and Agricultural Drainage; and all staff of the Training Division at DID.

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THE CONDUCT OF the activities described in this book, and the preparation of the book itself, would not have been possible without the active participation and support of all members of the training team and other staff of IIMI and DID who participated in the exercise. I offer my sincere thanks to all of them. Special thanks are due to Dato Ir. Haji Shahrizaila bin Abdullah, Director General of DID, who was mainly responsible for initiating the program and providing constant encouragement and support throughout.

I owe a very special word of thanks to Dr. P. S. Rao, who selflessly helped me throughout this program. To me, he seemed like a gift from heaven. He knows how much he helped me and how much his intellectual and spiritual competence and interpersonal skills influenced me in leading this program and writing this book.

My sincere thanks are due to Mr. Charles Nijman, Management Specialist, who always made himself available to give me his professional inputs, writing papers to support this program despite his busy schedule. I also thank Mr. Nik Ariff bin Sulaiman and Mr. Mohammed Azahari bin Ghazali, DID trainers, who stood by me even during late hours working as a strong team, sharing all responsibilities of the training activities to ensure the success of this program.

I also wish to extend my special thanks to the staff of the IIMI Training Unit, Mr. P. Mutukumarana, Assistant to the Training Specialist, and Ms. Muriet Stanislaus, the Secretary, who formed a very successful, efficient and cheerful team and worked tirelessly to complete this work.

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My thanks go to Dr. Andre Kampfraath for agreeing to provide specialized input on the planning and implementation of the TNA and thereafter. I would also like to thank Dr. David Constable for his devoted efforts in specially preparing and contributing towards the strategic planning process for the DID in Malaysia. I should specially mention the encouragement given by Mr. Charles Abernethy by being present to witness the success of the different stages of the training cycle. I offer my thanks to Mr. Khalid Mohtadullah for being with me at DID Malaysia during the strategic planning process, providing me with moral support and enthusiastically taking part in the discussions as the representative for IIMI.

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trainer for DID engineers and participated actively in the Workshop on Research on the Performance of Irrigation Systems in Besut.

I would also like to thank Dr. C.M. Wijayaratna, Head of Sri Lanka Field Operations Office at IIMI, for his valuable comments on the text of this book in his capacity as IIMI internal reviewer, and also Mr. Upali Amaresinghe, Research Data Analyst at IIMI, for his advice on the presentation of statistical data.

I am indebted to my organization, the Brazilian Public Corporation for Agricultural Research (EMBRAPA) for releasing me to work at IIMI.

I am also extremely grateful to the top management of IIMI for believing in and trusting in the success of the management training activities in Malaysia and for providing core funds to help complete a major part of the training program.

The last person I would like to thank is the most important one. I think it is fair to say that this book could not have been written without my soulmate, Stephen Parker, who sat with me endless hours understanding and encouraging me, discussing and stimulating my thoughts towards more creative ideas and patiently edited every stage of the book to make it clear and useful for the irrigation audience. This book is as much his as mine.

It is hoped that the description of the extensive and detailed work done in this pioneering training exercise in Malaysia will adequately reflect the contributions made by these and other colleagues, and provide inspiration and guidance to irrigation managers, researchers and trainers in other irrigation organizations in developing countries to attempt to carry out similar exercises in order to improve the efficiency and effectiveness of their irrigation systems and so contribute to increasing food and agricultural production and improving the quality of life of farmers and their families.

Zenete Peixoto França

Training Specialist

International Irrigation Management Institute

Summary

THIS ACCOUNT OF the planning, development, implementation and evaluation of training and institutional development activities at the Department of Irrigation and Drainage (DID) in Malaysia is organized in six parts.

Part I provides the background to the activity, outlining the conceptual framework and the training principles and techniques applied in this exercise, and gives a brief description of the historical development and present situation of irrigation in Malaysia.

The first chapter in Part I, Chapter 1, defines the concept of irrigation management and outlines the IIMI approach to irrigation management training and institutional development. The nature and elements of the training cycle and the techniques used are described. The second chapter in Part I provides an outline of the situation of irrigation management in Malaysia.

Part II contains four chapters describing in detail the extensive training needs and organizational constraints assessment (TNA) exercise which involved over 320 staff members from all levels within DID and other irrigation agencies in Malaysia and which provided the basis for the subsequent development of a training program designed to meet these needs. A general overview of the aims, objectives and organization of the TNA is provided in Chapter 3, followed by a description, in Chapter 4, of the Analytical Framework for Irrigation Management which formed the basis for many of the TNA sessions. The job analysis stage of the TNA, in which participants analyzed their jobs and the skills required to perform them, and the review and analysis of the participants' own job descriptions are dealt with in Chapter 5. These two activities laid the foundation for the core of the TNA, which comprised a detailed analysis of the managerial knowledge, attitudes and skills which the participants needed to have in order to perform their jobs, and of the organizational constraints which affected their work. This activity is described in detail in Chapter 6.

The results of the TNA exercise provided the basis for developing management training programs for DID, as described in Part III. This part contains six chapters describing how the results of the TNA exercise were used in developing management training programs which would fill the gaps in the managerial knowledge, attitudes and skills of DID staff. An important element in this process was the involvement of irrigation trainers in the TNA process, which is described in Chapter 7. This enabled the trainers to identify gaps in their own managerial knowledge and skills, which subsequently provided the basis for developing a training of trainers program, and made it possible for them to experience the TNA process at first hand and so understand its importance as a means of providing the basis for the planning of training activities.

Top managers of DID and researchers from DID and other organizations, were also involved in the TNA in the same way. The results of their participation are described in Part IV, Chapter 13, and Part V, Chapter 16, respectively.

Chapter 8 describes how the results of the TNA were used to prepare a training plan for DID, in an activity involving both the DID top management and the IIMI training team. The training plan provided the basis for the development of training curricula and other activities for the training of engineers and overseers, as described in Chapter 9. The preparation of training materials to support these curricula is dealt with in Chapter 10. This activity demonstrated how the published results of IIMI research could be translated into effective training materials.

In order to apply these training materials in implementing the training curricula, the Malaysian trainers, most of whom had little or no previous training experience, had themselves to be trained to perform in this role in the training of trainers activity described in Chapter 11. To ensure that this process had been effective, the implementation of the training curricula by the Malaysian trainers, in two pilot training programs for engineers and overseers, respectively, was monitored by the IIMI training team, as described in Chapter 12.

Part IV of the book is composed of three chapters dealing with the involvement of DID top management in all phases of the training program, including the TNA. Chapter 13 describes how the top managers themselves were involved in the TNA in order to make them aware of its importance in helping to provide a basis for analyzing irrigation jobs at DID and identifying the skills required to perform them. Chapter 14 describes how, influenced by the results of the TNA exercise and the implementation of the pilot training programs, the top managers came together with IIMI senior staff and consultants to consider issues in strategic planning for DID, including discussion of a mission statement and the objectives, strategies, activities and performance standards and indicators required for the development of the organization. Chapter 15 describes the further development of strategic planning and human resources development at field level in the Besut and Kerian irrigation schemes.

Part V is concerned with improving the capacity of DID and other organizations to conduct effective research into irrigation management issues. Chapter 16 describes how a group of researchers were involved in the TNA, partly in order to help them identify the gaps in managerial knowledge and attitudes which should be considered in preparing a training program for researchers, but also to give them the opportunity to discuss irrigation management issues and identify problems affecting DID which could subsequently be addressed through collaborative research. Chapter 17 presents the results of a training workshop on research on the performance of irrigation systems which aimed to prepare DID professional staff in the Besut and Kerian irrigation schemes to assume responsibility for monitoring and evaluating system performance and for conducting the research needed to solve problems in this area in collaboration with the Universiti Pertanian Malaysia and other research institutions.

Part VI presents the general conclusions arising from the entire exercise. It contains one chapter, Chapter 18, which identifies the main factors which influenced the results of the program, describes the major problems and difficulties experienced, and presents the lessons learned. It outlines the actions which DID is expected to take to ensure the sustainability of the program and to measure its results. A list of references to works cited in the text and a bibliography of items for further reading complete the work.

PART I

BACKGROUND

THIS FIRST PART of the description of irrigation training activities at the Department of Irrigation and Drainage (DID) in Malaysia provides the background to the remainder of the work. It comprises two chapters.

Chapter 1, "Training in Irrigation Management," defines the concept of irrigation management and briefly outlines the approach to irrigation management training and institutional development adopted by the International Irrigation Management Institute (IIMI). It goes on to explain the nature of the training cycle, and briefly describes each of its elements in turn, thus providing an overview of the remainder of the book. The innovative nature of the IIMI approach to carrying out a training needs and organizational constraints assessment (TNA) is emphasized, and the techniques used are briefly outlined. The chapter concludes with a summary of the Analytical Framework for Irrigation Management which provided the conceptual foundation for many of the sessions throughout the training cycle, and which is described in more detail in Part II, Chapter 4.

Chapter 2, "Irrigation Management in Malaysia," provides a brief outline of irrigation management in the country in general, and of DID in particular, as well as summarizing the activities of three other organizations which are involved in irrigation in Malaysia and which participated to some extent in the activities described in this book.

CHAPTER 1

Training in Irrigation Management

INTRODUCTION

IRRIGATION MANAGEMENT IS defined by IIMI as

the process in which institutions or individuals set objectives for irrigation systems; establish appropriate conditions; and identify, mobilize, and use resources, so as to attain these objectives; while ensuring that these activities are performed without causing adverse effects (IIMI 1992).

Management training is sometimes defined as a series of activities designed to develop the ability to acquire or improve management techniques and methods related to the participants' job performance. More often, however, the concept is broadened to include activities and learning opportunities for improving managerial competence -- that is, improving leadership and communication styles, developing self-confidence, and so on, which constitute management development (Kubr 1989).

IIMI ACTIVITIES IN IRRIGATION MANAGEMENT TRAINING AND INSTITUTIONAL DEVELOPMENT

The management training and institutional development activities of IIMI are designed to contribute to its goals of strengthening national research capacity and supporting the introduction of improved irrigation management systems and policies.

The IIMI approach combines management training and management development with the aim of helping irrigation managers to develop a capacity for organizational visioning, which in turn promotes their commitment and interest in creating an ideal future for their organization. It compels managers and employees to explore the strengths and weaknesses of their organization and to rethink its mission or goals, its objectives and strategies and its values and beliefs. The aim is to create an organization capable of defining the performance standards and indicators needed to evaluate its own results and predict its future.

The training program of IIMI aims to achieve these results by: strengthening national institutions through working in partnership with national training centers and universities to implement the training cycle described below; training individual managers and policymakers through national or regional training programs, study tours, workshops, conferences, and so on; strengthening national research institutions through designing collaborative research activities, assisting national consultative committees, and so on; and training individual researchers through on-the-job training, fellowships, and career internships for post-doctoral studies.

IIMI started to provide support to the development of training activities in national institutions late in 1988, when its Training Specialist began to visit institutions and training agencies in various countries to find out about their existing training capabilities and facilities and their views on irrigation management training. It was observed that many national training centers and irrigation institutions tended to stress the technical aspects of irrigation in their activities, giving much less emphasis to management training.

On a world basis, there are many courses and other training programs for managers in training centers, universities and consulting firms which provide general management training. These programs tend, however, to be too general and too theoretical to meet the real needs of irrigation professionals.

The main objective of IIMI's management training efforts is to help meet these needs by providing managers, researchers and trainers in the irrigation sector with the opportunity to develop awareness and understanding of their own potential and of the complexity of irrigation systems, and to learn how to cope with their real problems and propose creative solutions. The IIMI approach is also designed to help irrigation professionals to develop self-confidence and motivation, encouraging them to take risks in implementing management innovations that can improve the performance of irrigation systems.

OUTPUTS OF MANAGEMENT TRAINING AND DEVELOPMENT

It is important to note that management training and development activities produce mainly intangible outputs such as improvements in knowledge, changes in attitudes and behavior, the development of new skills, and so on. In general, the tangible outputs are either designed to help produce such changes, or record the process by which they were brought about or the extent to which they were achieved.

Thus, for example, the primary product or output of a workshop designed to help irrigation engineers to develop better relationships with farmers would be changes in the attitudes and behavior of the engineers in terms of their ability to approach the farmers in a friendly way, listen sympathetically to their problems, and cooperate effectively with them in finding lasting solutions.

The extent to which these intangible outputs have been achieved may be measured by a variety of tangible instruments, such as questionnaires, self-evaluation forms, and the like, which are used during the training process; while the training materials which helped to bring about these changes would themselves be the tangible output of an

earlier process of designing such materials in order to meet the identified training needs in this respect.

TRAINING DEVELOPMENT AND THE TRAINING CYCLE

The lack of strong management training programs within irrigation agencies in developing countries has led donor agencies and other support organizations to call for better and more appropriate training, designed to meet the practical needs of irrigation management professionals and help improve their performance on the job.

IIMI's training program takes account of the importance of relating the content of the training to the skills required for satisfactory job performance, with the aim of solving organizational problems. It is a results-driven program.

The action research model for *Organizational Development* (French and Bell 1978) was selected to undertake the activities of the training cycle. It was believed that the three major processes which compose action research -- data collection, feedback of the data to the clients, and action planning based on the data -- would provide DID management, while providing data and receiving feedback, with the best chance of getting a deep awareness of diverse aspects of their organization, discussing them openly and assessing weaknesses and strengths, working on the problems and afterwards, designing and implementing action plans to solve the problems.

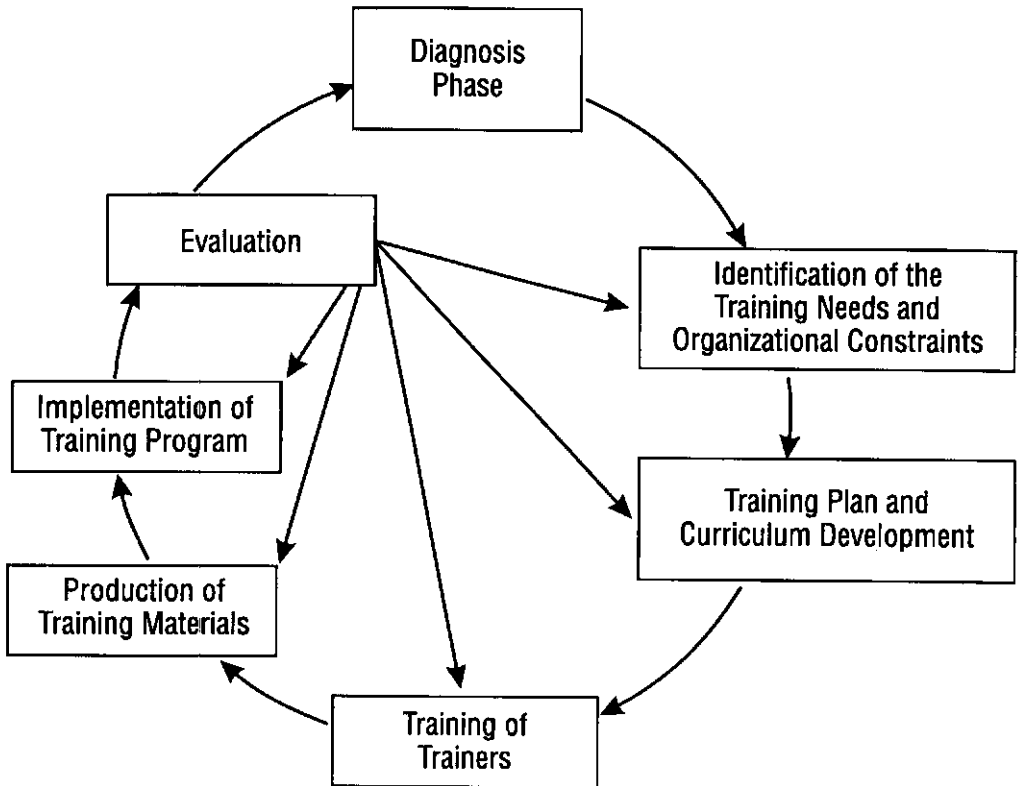
The assistance given to national agencies to improve their managerial effectiveness follows a training cycle which comprises six stages, as follows:

- * Training needs and organizational constraints assessment (TNA);
- * Training plan and curriculum development;
- * Training of trainers;
- * Production of training materials;
- * Monitoring the implementation of training activities; and
- * Evaluation of all stages of the training cycle.

The basic training cycle is illustrated in Figure 1. It functions as an awareness-raising or preparation phase within the organization. Managers begin to believe in training by participating in and evaluating all stages of the cycle. The activities are developed on a sequential basis. Each step accomplishes its objectives and prepares the requirements for fulfilling the next one, until the cycle is completed.

Figure 1. The strategic training cycle.

STRATEGIC TRAINING CYCLE



The strategic training cycle provides managers with the opportunity to become aware of the importance of having a training program designed specifically to meet the needs of the staff and of the organization; that is, to develop the skills needed to solve the problems of the organization and to improve its performance. In addition, it takes account of the need for follow-up and post-impact evaluation programs to assess the effects of the training, first, on the ability of the institution to provide irrigation support to farmers, and second, on the improvement of the performance of irrigation systems. Post-impact evaluation of the management training program requires accurate information on the organization's mission or goals, objectives and activities, and on the indicators, measures and standards of performance which are being applied.

Strategic corporate planning, which constitutes

an integrated and systematic approach to the management and coordination of the total range of activities for an agency (Corporate Planning in Victorian Government 1986)

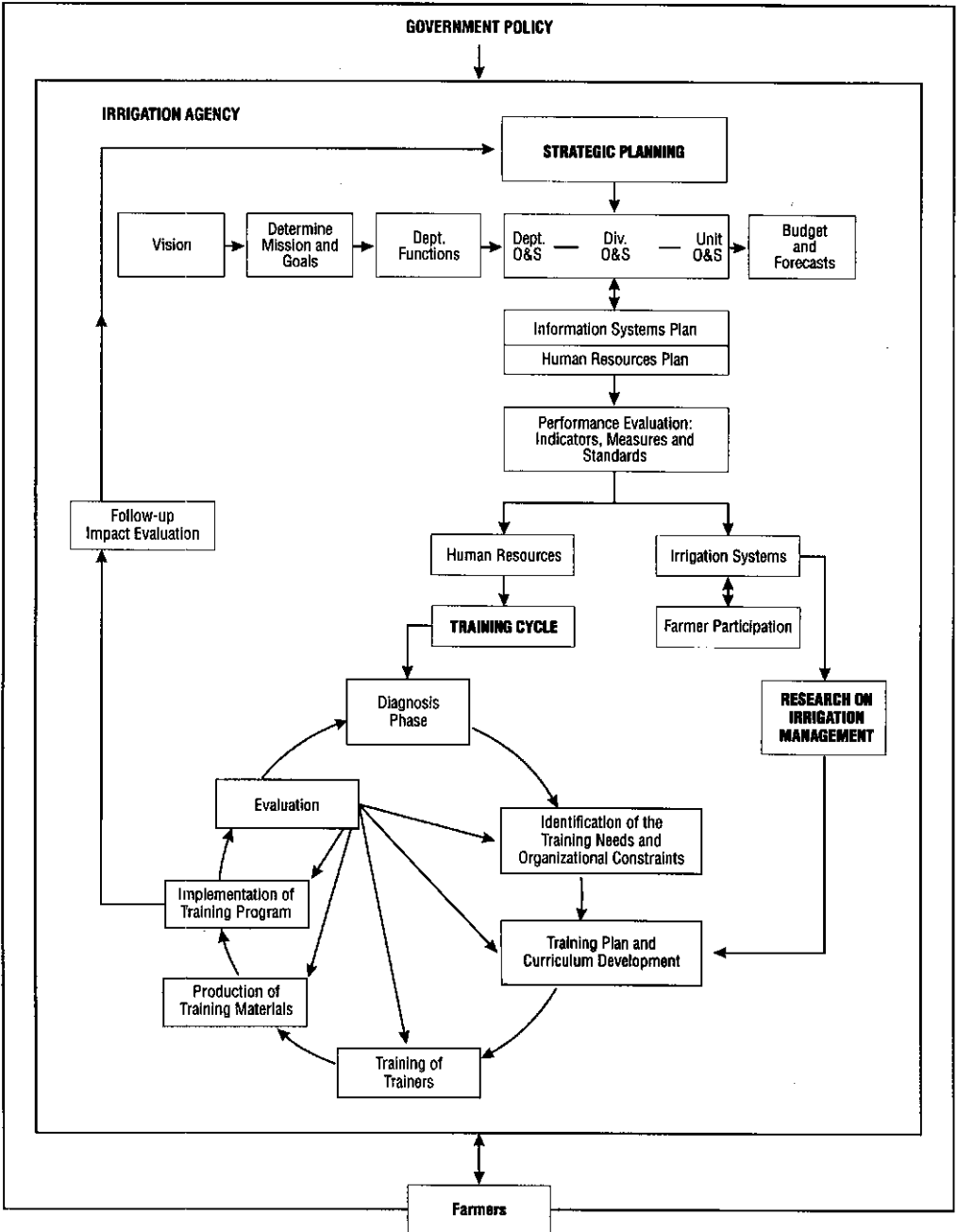
provides the best approach to enable the smooth development of the training cycle and the evaluation of its impact on the organization. It clearly defines the objectives, strategies and activities of the organization, including necessary staff skills, and emphasizes human resources development planning as a key activity which incorporates a staff performance evaluation system, whose results lead to the diagnosis phase of the training cycle. The training cycle is thus closely linked with the strategic planning and human resources development program which evaluates the performance of personnel in the organization. These linkages are illustrated in Figure 2.

Each of the main stages in the strategic training cycle is described in more detail below.

TRAINING NEEDS AND ORGANIZATIONAL CONSTRAINTS ASSESSMENT (TNA)

The first stage in the cycle is the conduct of a TNA exercise to identify organizational constraints and gaps in the managerial knowledge, attitudes and skills of irrigation managers, researchers and trainers, and indicates possible training or non-training solutions. The outputs expected from this exercise are listed in Chapter 3, which also provides an overview of the TNA exercise as a whole. The main stages in the TNA, namely, presentation of the Analytical Framework for Irrigation Management (Nijman 1985), job analysis, analysis of job descriptions and identification of the requirements and gaps in managerial knowledge, attitude and skills, and organizational constraints, are described in Chapters 4 to 6.

Figure 2. Organizational linkages with training and research.



Note: O & S = Objectives and Strategies.

TRAINING PLAN AND CURRICULUM DEVELOPMENT

The training plan defines the activities which will be implemented during a certain period of time in order to develop commitment, support and participation in all activities of the training cycle. It involves making decisions on various aspects of the training program. The outputs of this activity are listed in Chapter 8.

The curriculum development stage aims to identify the specific methods and media required to fulfil the training needs of the staff and the organization, which were identified during the training needs and organizational constraints assessment. The curriculum is essentially a master plan for all the activities of a specific training program, not merely a list of subjects to be learned, as is often assumed. The outputs of the curriculum development stage are listed in Chapter 9.

An important element in the preparation of a training plan and the development of curricula is the participation of trainers and researchers in the TNA itself. This not only provides useful information about their own training needs, but also, and more importantly, helps to make them aware of the importance of carrying out a TNA to provide a firm basis for the design and implementation of training programs, and of the need to disseminate the results of research through training. The involvement of trainers and researchers in these activities is described in more detail in Chapters 7 and 16, respectively.

PRODUCTION OF TRAINING MODULES AND MATERIALS

This activity aims to produce a variety of basic training materials to support the newly-developed curricula in irrigation management for specific groups of participants. The training materials will facilitate the learning process and help to disseminate the innovative approach to irrigation management as widely and as quickly as possible. The outputs of this activity are specified in Chapter 10.

TRAINING OF TRAINERS

The training of trainers stage aims to develop the ability of trainers from national irrigation training institutions to understand, internalize and transfer the concept of irrigation management through planning, implementing and evaluating training programs for irrigation managers, researchers and other trainers. The anticipated outputs of this activity are listed in Chapter 11.

MONITORING THE IMPLEMENTATION OF TRAINING ACTIVITIES

This activity ensures the effective implementation of the training, which is designed step-by-step to facilitate learning, sensitize participants and develop commitment. It also encourages new trainers to use their newly developed skills with confidence, since they can have the necessary professional support and assistance at any time during the implementation process. The outcomes expected from this activity are listed in Chapter 12.

EVALUATION OF ALL STAGES OF THE TRAINING CYCLE

The evaluation of the training cycle aims to collect oral and written information from the participants on the strong and weak points of the training activities, together with suggestions for improving them. The training cycle as implemented in Malaysia was evaluated in terms of content, process and program at every stage, and the results are presented in the appropriate chapters below.

Managers begin to believe in training by participating in and evaluating all stages of the cycle.

The results of the evaluations were recorded by means of a variety of instruments, including questionnaires using both rating scales and open-ended questions. They provided information which could be used to improve the weaknesses and reinforce the strengths of each of the training activities, and led to increased awareness among trainers of the level of achievement of the training activity both in terms of its objectives and usefulness for the clientele, and of their own professional capabilities.

AN INNOVATIVE APPROACH TO ASSESSING THE TRAINING NEEDS OF IRRIGATION PROFESSIONALS

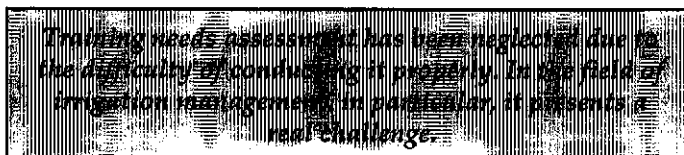
The training cycle of IIMI calls for a training needs assessment to be carried out as the first training activity in each country seeking IIMI support for training in irrigation management.

Training needs assessment has been a neglected activity due to the difficulty of conducting it properly. Its success depends upon many factors, such as:

- * The managers' interest in participating in training activities;

- * The importance attached to training within the organization;
- * The availability of adequate financial support;
- * The identification of suitable potential participants;
- * The extent to which the objectives of the organization have been clearly defined; and
- * The managers' level of confidence in training as a means of improving productivity and achieving organizational objectives.

In the field of irrigation management, in particular, the assessment of training needs presents a real challenge. In addition to the factors mentioned above, there is a lack of awareness, on the part of many irrigation professionals, of the concept of irrigation management; yet this provides the essential basis for analyzing the organization and the training needs of its personnel.



In order to overcome this difficulty, IIMI has created and applied an innovative approach based on promoting interaction between the staff of an irrigation organization to discuss the concept of irrigation management, the difference between managerial and technical aspects of irrigation jobs and their requirements as well as the existing gaps in knowledge, attitudes and skills, and the organizational constraints which prevent irrigation professionals from performing better in providing effective services to the farming communities.

The important aspect of this innovative approach is to bring together, for small group exercises, a representative sample of irrigation professionals from the organization in question. The members of the sample are divided into groups of about twenty persons each, which meet together for about one and a half days in a variety of interactive sessions.

These sessions are structured in such a way that the process of understanding the essential concepts, and of translating them into operational terms, takes place gradually among the participants as a result of their own efforts and self-analysis. The sessions provide the participants with a variety of opportunities for presenting and discussing their own experiences and attitudes in the work environment. The intention is to promote awareness through the analysis of past experiences – both successful and unsuccessful – aiming to reflect on causes, discuss them and propose and evaluate possible solutions.

TECHNIQUES FOR ASSESSING TRAINING NEEDS

The training literature proposes several individual and group methods and techniques for assessing training needs, including organizational and job analyses. They have, however, been rarely used in practice.

The IIMI approach to training needs assessment uses several such techniques in different phases of the exercise to gather reliable information and ensure effective results. They are chosen and used strategically, encouraging participants to express their views in different ways, sometimes as individuals and at other times in groups.

At the outset of the exercise, paired discussion techniques are used in an interactive exercise designed to help the members of each group to get to know each other. The aim is to facilitate subsequent interaction and help the participants to feel at ease by talking to each other about their backgrounds, professional and personal experiences, and so on.

Interviewing is used in combination with other techniques to facilitate interaction between the facilitators and the participants, to diagnose the participants' levels of understanding and assess relevant aspects of their jobs.

Brainstorming techniques are applied to encourage participants to identify the managerial knowledge, attitudes and skills needed to perform their jobs, without restraint or criticism from the other members of the group.

Both self- and group-administered questionnaires are used as evaluation tools to enable participants to demonstrate their levels of awareness and understanding of the technical and managerial aspects of their jobs.

The Nominal Group Technique (NGT), through which groups of participants "nominate" problems in a noninteractive way, with the aim of arriving at group decisions, is used in a modified form.

The practical application of these techniques, and the results obtained, during the training needs assessment conducted with IIMI support at the Department of Irrigation and Drainage in Malaysia in 1990, are described in detail below.

THE ANALYTICAL FRAMEWORK FOR IRRIGATION MANAGEMENT

The Analytical Framework for Irrigation Management, which provided the conceptual foundation for much of the discussion of irrigation management problems throughout the training cycle in Malaysia, is based on a general management framework developed at the University of Wageningen in the Netherlands. The main focus of the framework for irrigation management is on the management of water as the primary irrigation activity. The development of such a framework was an IIMI objective, and was achieved during case studies of two irrigation systems in Sri Lanka.

The framework aims to translate the general management decision-making processes which occur in all kinds of organizations into processes specific to the management of irrigation systems. It considers decision making to be a major factor in determining the performance of irrigation systems. Decision making is recognized as a key

management activity; hence the relevance of the framework to the assessment of the training needs of irrigation managers.

An important concept underlying both the Analytical Framework itself and its application in the training needs assessment, is the distinction between the technical and managerial dimensions of the decision-making process. These are distinguished as follows:

- * The *technical* (or substantive) dimension refers to alternative technical approaches for seasonal planning, operational plans, operational methods and so on, including the assumptions made and the data used in decision making as well as the establishment of priorities; and
- * The *managerial* dimension refers to the *methods* or *processes* of decision making, for example, the involvement of water users and staff of different agencies in different stages of the process of seasonal planning, the allocation of responsibility and authority among different groups, the nature of the interaction between them, and so on (Nijman 1985).

The content of the Analytical Framework, and its presentation to participants during the TNA exercise, are discussed in Chapter 4.

CONCLUSION

Planning, implementing and evaluating irrigation management training programs, with the aim of influencing the institutional development of irrigation agencies in developing countries, are not easy tasks. However, by adopting a strategic approach, by providing a deliberate plan to the national organization and by involving managers from all levels in reflecting on the actual problems they face in the work environment, the task can be made easier and can lead to productive results.

Educational and psychological research has proved that, in general, adults develop motivation to learn, and learn quickly, when they believe they can solve imminent problems they face in life rather than when merely learning about a specific subject. The learning of problem-solving can be facilitated when the adults are in group interaction (Kerrigan 1987).

The experience of IIMI and DID in adopting this innovative approach to assessing training needs and organizational constraints in irrigation management through group interaction or interactive exercises has shown it to be effective. It helps managers to become aware of the managerial and technical aspects of their work and related problems and the organizational constraints to which they are subject, and so provides a reliable means of obtaining the information needed for designing training curricula and implementing training courses capable of meeting the needs of the organization.



CHAPTER 2

Irrigation Management in Malaysia

INTRODUCTION

MALAYSIA IS A country located in Southeast Asia with a population of about 16 million people. The country's official name is the Federation of Malaysia. The federation was formed in 1963, when Malaysia, Sabah, Sarawak and Singapore united. Singapore left the federation in 1965.

Malaysia covers the southern part of the Malay Peninsula (West Malaysia) and most of the northern part of the island of Borneo (East Malaysia). Malaysia consists of thirteen states and the federal territory of Kuala Lumpur. Eleven of the states and the federal territory make up West Malaysia (Figure 3). The eleven states are: Johor, Kedah, Kelantan, Melaka, Negeri Sembilan, Pahang, Perak, Perlis, Pulau Pinang, Selangor and Terengganu. The other two states are Sabah and Sarawak, which make up East Malaysia. West Malaysia and East Malaysia are separated by about 400 miles of the South China Sea. Most of the people live in West Malaysia.

IRRIGATION IN MALAYSIA

Until recently, irrigation in Malaysia has mainly been restricted to the cultivation of wet unhusked rice, which is grown by about 300,000 smallholder farmers in the country, most of whom operate farms ranging from 0.8 to 2.0 hectares in size. The rice fields of Peninsular Malaysia are located mainly in the coastal plains and in long and narrow riverine areas. The larger areas are in the coastal plains of Kedah, Perlis, Kelantan, Seberang Prai, Perak, Selangor and Malacca.

From the earliest times, Malaysia practiced some form of conservation of water for irrigation purposes. The Wan Mat Saman Canal, for example, was built in 1888 to provide effective controlled drainage for the fertile lands in North Kedah. In the 1930s, it was recognized that some effective form of water control should be created in order to increase food production. Irrigation was then introduced, aimed at providing controlled drainage and "inundation" systems for rice cultivation. Gradually, such schemes were improved with the provision of irrigation facilities whereby water is diverted from a river into a system of canals commanding the rice lands. After Independence in 1957, the emphasis in irrigation development shifted to increasing the income and employment opportunities of the rural poor.

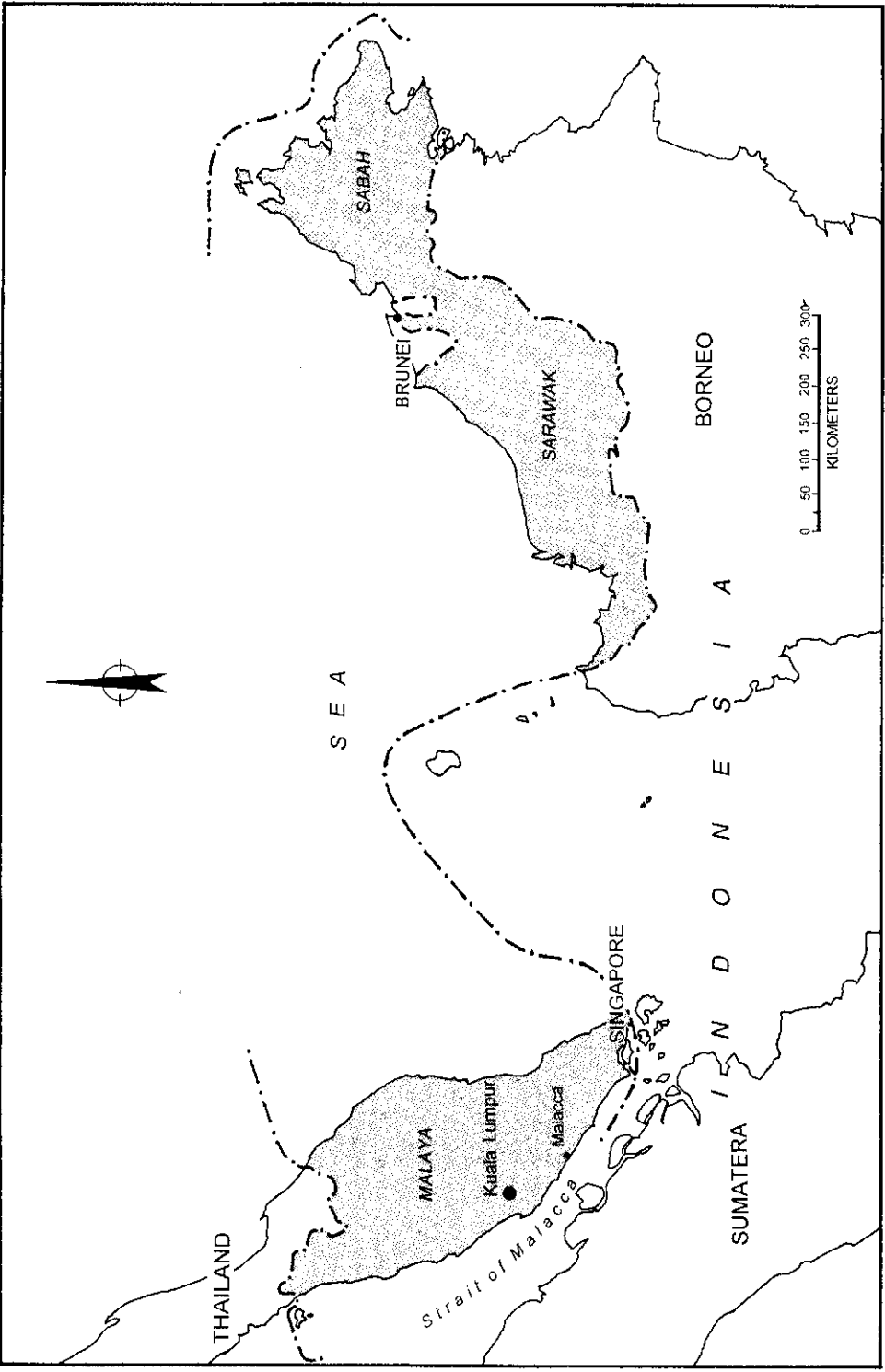


Figure 3. Map of Malaysia.

In the late 1980s, as a result of an increasing movement of labor from agriculture to industry, coupled with falling international rice prices, rice production became increasingly uneconomical and more and more lands were left uncultivated. Small irrigation schemes were badly affected by this, and many were abandoned. In the major schemes, however, productivity was not so badly affected.

The National Agricultural Policy, promulgated in 1984, specified that rice production should be concentrated in eight large irrigation schemes, known as Granary areas, and that any further irrigation investment was to be for these areas only. The Granary areas, which include the Muda Agricultural Development Authority (MADA) and the Kemubu Agricultural Development Authority (KADA), total some 212,000 hectares, and are responsible for more than 65 percent of the country's rice production. In the non-granary schemes, which have a total area of about 132,000 hectares, rice production is meant to be gradually phased out in favor of cash crops, industrial tree crops and aquaculture (Abdullah 1988).

THE DEPARTMENT OF IRRIGATION AND DRAINAGE (DID)

The Department of Irrigation and Drainage (DID) was established as a separate department of the Ministry of Agriculture on 1 January 1932, to deal with land and water resources development with particular reference to the use of these natural resources for increasing rice production. Since then, DID has been the agency generally responsible for the planning, design, construction, rehabilitation and operation and maintenance of all civil engineering infrastructures for irrigated rice schemes in the country, in addition to its other functions in the field of agricultural drainage, river engineering, coastal engineering, hydrology and water resources assessment.

The DID Federal Headquarters is responsible for overall drainage and irrigation matters in the country. Whilst irrigation areas throughout the country are managed by DID through units at district level, specific large command areas in Muda and Kemubu are managed by MADA and KADA, respectively. Within DID, the management at district levels is headed by the District Engineers who are assisted by technical staff including engineers, technical assistants, technicians, irrigation inspectors and irrigation technicians with the latter covering the smallest irrigation units. It should be noted that irrigation technicians were formerly known as irrigation overseers, and are referred to as such throughout this book.

Development within the irrigation schemes increases the densities of canals, drains, farm roads and structures. The responsibilities and skills required for the operation and maintenance of the schemes have thus been significantly increased. Also, farmers are given more attention and are motivated to cope with the requirements of modern rice farming and proper water management practices.

Operation and maintenance (O&M) personnel in DID consist of engineers, technical assistants, irrigation inspectors, irrigation overseers, machine and pump operators, and line or gate operators. They are engaged in the following activities, among others:

- * Overall management of the water resources and their equitable and timely distribution and drainage;

- * Day-to-day operation of the engineering, irrigation and drainage infrastructure so as to supply the necessary irrigation water according to schedule, as well as to ensure the required drainage discharges during each planting season;
- * Proper maintenance of the various engineering facilities so that they are in good and efficient working and operating condition;
- * Ensuring the practice of good water management techniques by the farmers and dealing with their problems and requests;
- * Undertaking irrigation extension works with the farmers; and
- * Attending meetings and dialogue sessions in the project area and becoming involved in the agricultural extension system (Abdullah 1988).

The broad duties of the various categories of operation and maintenance personnel are as follows:

Engineers

Overall management and control of O&M activities and of special construction works and repairs to system infrastructure.

Technical Assistants

Undertaking construction and repair works and supervising maintenance plant and equipment.

Irrigation Inspectors

Daily O&M of irrigation infrastructure and ensuring equitable distribution of water according to planting schedule.

Irrigation Overseers

Daily O&M of irrigation infrastructure and repair works, and ensuring equitable distribution of water according to planting schedule over smaller areas and in direct contact with farmers.

Machine and Pump Operators and Line or Gate Operators

O&M of specific structures according to set standing instructions, carrying out measurements and keeping records (Abdullah 1988).

MUDA AGRICULTURAL DEVELOPMENT AUTHORITY (MADA)

The Muda Agricultural Development Authority (MADA) is a semiautonomous agency which came into effective operation in 1969 and was formally established in 1970. Statutorily responsible to the Ministry of Agriculture, and under the budgetary control of the Ministry of Finance, MADA has responsibility for operating and improving the irrigation system and its area and supplying extension, credit and other services to farmers. It has also been innovative and active in the planning of improvements, project socioeconomic evaluation, and so on.

KEMUBU AGRICULTURAL DEVELOPMENT AUTHORITY (KADA)

The Kemubu Agricultural Development Authority (KADA) is administered by a Board whose eleven members represent both the State of Kelantan and the Government of Malaysia. It was established in 1972 and was officially launched in 1973 with the objectives of promoting, stimulating, facilitating and undertaking economic and social development in KADA areas and of planning and implementing agricultural development in accordance with the requirements of the State Government. It is also responsible for encouraging farmers to cultivate crops other than rice in order to increase their incomes.

MALAYSIAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE (MARDI)

The Malaysian Agricultural Research and Development Institute (MARDI) is administered by a governing Board headed by a Director General. It began operations in 1971. The overall objective of MARDI is to develop and promote new and improved appropriate agricultural technologies capable of increasing productivity and efficiency towards modernization of the agriculture sector as well as maximizing income from agriculture in line with the National Agricultural Policy.

CONCLUSION

The wide-ranging responsibilities of DID for overall drainage and irrigation matters, including providing a basis for improved water management to further exploit the agricultural potential of existing irrigation projects in Malaysia, and assisting in the management of the areas irrigated by MADA and KADA, emphasize the importance

of a continuing management training program for the personnel of these organizations. In recent years, irrigation management training had become one of the major concerns of the management and senior engineers of DID and the other organizations. The aim of the training activities described in this book was to allay this concern by helping the staff of these organizations to identify their own training needs and to meet them by designing and implementing their own training programs in irrigation management.

Irrigation management training had become one of the major concerns of the management of DID.

PART II

TRAINING NEEDS AND ORGANIZATIONAL CONSTRAINTS ASSESSMENT

THE SECOND PART of this book contains four chapters which together provide a detailed account of the conduct of the training needs and organizational constraints assessment (TNA) carried out in the Department of Irrigation and Drainage in Malaysia, with support from IIMI.

To provide the reader with a general picture of the main stages in the TNA, which involved more than 320 participants in sixteen sessions and employed a variety of interactive training techniques, a general overview of the aims, objectives and organization of the TNA is provided in Chapter 3, the first chapter in Part II.

Chapter 4 presents the Analytical Framework for Irrigation Management which formed the basis for many of the TNA sessions, and summarizes the presentation and discussion of the framework.

Chapter 5 describes the job analysis stage of the TNA, in which participants analyzed their own jobs and the skills required to perform them. This activity was followed by a review and analysis of the participants' own job descriptions. These activities laid the foundation for the detailed analysis of the participants' jobs in terms of the managerial knowledge, attitudes and skills required to perform them and the organizational constraints which affected their work. This activity, which constituted the core of the TNA, is described in detail in Chapter 6.

The analysis of the participants' jobs in this way provided the basis for the design and implementation of a training program designed to fill the gaps in managerial knowledge, attitudes and skills revealed by the TNA. These activities are described in detail in Part III of the book.

CHAPTER 3

Overview of the Training Needs and Organizational Constraints Assessment

INTRODUCTION

IN RECENT YEARS, the Department of Irrigation and Drainage (DID) of Malaysia had become aware of a need to review its approach to irrigation management. It was felt that the focus should be on managerial and client-oriented aspects and on output and performance. To bring about such a change of emphasis in the organization, a new approach to training and human resources development would be needed. These topics were discussed in several workshops and conferences organized by DID in the late 1980s.

PRELIMINARY ASSESSMENT

In February 1989, the IIMI Training Specialist visited the DID Training Centers in Kuala Lumpur and Kota Bharu and five other training agencies in Malaysia to get acquainted with the local capabilities for developing irrigation management training.

Two important points were observed during this visit: first, the management aspects of irrigation had never been included in the curricula of the training agencies; and second, there was a lack of clear understanding of the concept of irrigation management among irrigation and training professionals.

A preliminary evaluation of the situation, together with general comments on managerial knowledge, attitudes and skills, was presented to and discussed with DID managers at the DID headquarters during a two-hour meeting on 10 February 1989. During the meeting, the Director General of DID expressed his concern about the issues of irrigation systems management in general, and human resources development in particular.

In March 1989, IIMI was invited to collaborate with DID in reviewing its existing training programs in order to improve their irrigation management component and make them more relevant to the needs of the organization. It was agreed that the first stage in this process should be to conduct a training needs assessment involving irrigation managers, researchers and trainers of DID and other Malaysian irrigation agencies and universities, to find out what kinds of knowledge, attitudes and skills

would be required to improve managerial performance and what kinds of constraints should be overcome to improve organizational performance.

AIMS AND OBJECTIVES OF THE TNA

The main objective of the TNA in Malaysia was

to identify factors affecting individual performance in irrigation management at DID and to indicate the nature of the appropriate solution (training or non-training) in respect of each factor (IIMI 1989).

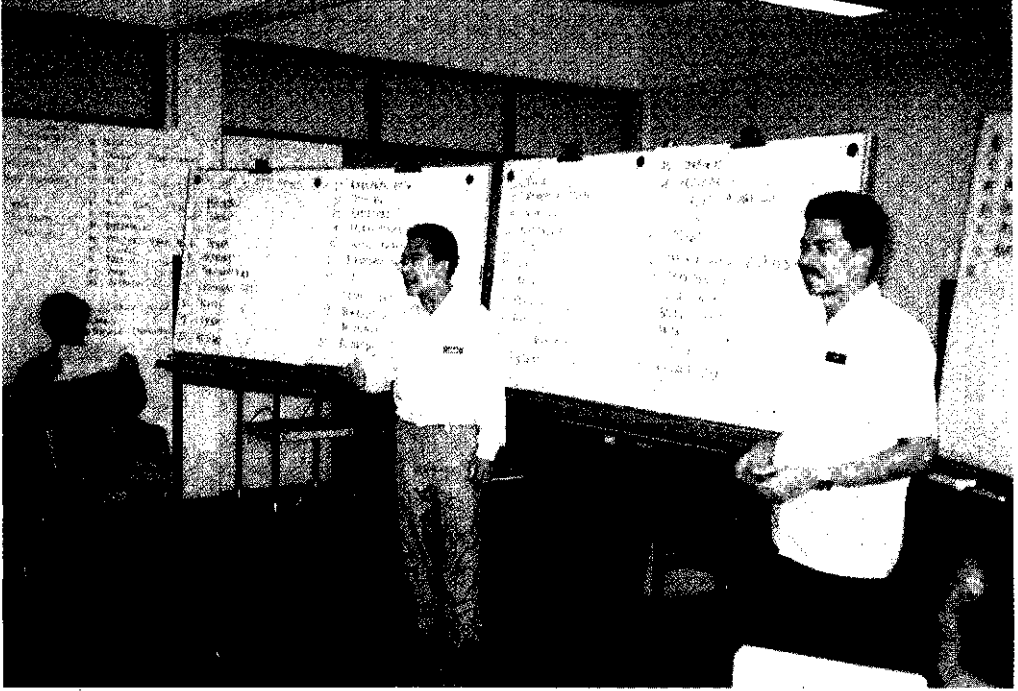
In order to achieve this objective, the TNA exercise was designed to enable participants to:

- * Review the concepts of irrigation management and the distinction between managerial and technical activities;
- * Review their own job descriptions;
- * Conduct a job and task analysis;
- * Identify the managerial knowledge, attitudes and skills required to perform their tasks;
- * Identify existing gaps in their own managerial knowledge, attitudes and skills;
- * Identify organizational constraints; and
- * Establish priorities among the identified training needs.

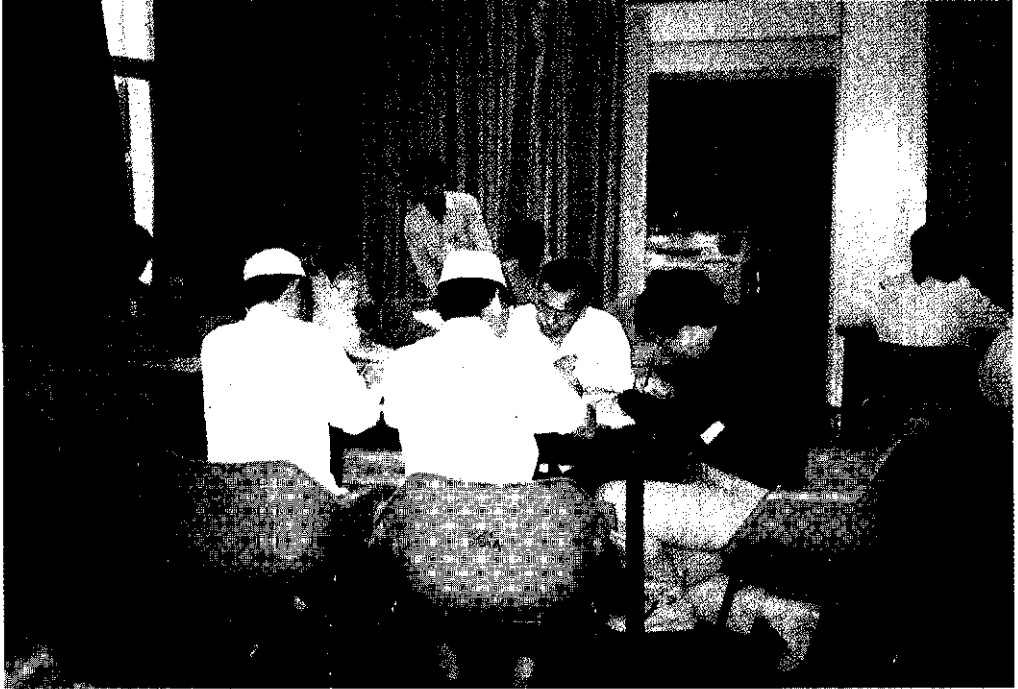
EXPECTED OUTPUTS

The intangible outputs of the TNA exercise were expected to include:

- * Improved understanding of the technical and managerial aspects of irrigation jobs;
- * Improved understanding of duties and tasks performed in irrigation management in terms of the required knowledge, attitudes and skills and the identification of gaps in these areas;
- * Increased awareness of organizational constraints;
- * Understanding of new concepts;
- * Increased awareness, which facilitates behavioral changes and the development of new attitudes and skills;



Malaysian trainers leading a session for TNA.



The TNA participants work in an interactive exercise.

- * Greater awareness of the importance of performance assessment and improvement;
- * Increased interest in knowing more about colleagues;
- * Improved relationships and understanding for working together;
- * Better understanding of irrigation management issues; and
- * Interest in improving the TNA exercise.

The tangible outputs were expected to include:

- * Lists of suggestions for improving job descriptions;
- * Lists of the main duties and the respective tasks involved in irrigation jobs;
- * Lists of the elements of managerial knowledge, attitudes and skills required to perform irrigation tasks;
- * Lists of gaps in the existing managerial knowledge, attitudes and skills of the staff of the organization, which would be used in designing short- and long-term training programs; and
- * Lists of organizational constraints on managerial effectiveness, with suggestions for overcoming them.

ORGANIZATION OF THE TNA

The TNA was organized in a total of sixteen sessions with eight different groups of participants, as follows:

- * One session with top managers;
- * Three sessions with engineers;
- * Two sessions with technical assistants;
- * Two sessions with technicians;
- * Two sessions with irrigation inspectors;
- * Four sessions with irrigation overseers;
- * One session with researchers; and

- * One session with trainers.

The session with top managers from DID was an orientation session in which the aims and objectives of the exercise were discussed, the methodology explained and data collection instruments pretested. This session provided a useful background for the top managers to participate in the strategic planning process, and is described in Chapter 13.

The main aim of the exercise was to assess the training needs of the engineers, technical assistants, technicians, irrigation inspectors and irrigation overseers. The results of the thirteen sessions with these "core" groups are described in the remaining chapters in Part II.

Research in irrigation management in Malaysia is not carried out by DID, but by MARDI. The researchers' group was therefore composed mainly of MARDI staff, researchers from the University of Agriculture of Malaysia (Universiti Pertanian

The identification of job requirements and constraints constituted the core of the TNA.

Malaysia [UPM]) and a few prospective researchers from DID. The TNA session with researchers is described in Chapter 16.

The group of trainers included both DID trainers and staff from other institutions likely to be associated with DID in implementing any future training programs in irrigation management. These institutions were, MADA, KADA, MARDI, UPM, the Department of Agriculture (DOA), and the National Institute for Public Administration (INTAN). The TNA session with trainers is described in Chapter 7.

Most of the groups had between twelve and twenty-five members; however, the average number of participants in each group was twenty. Each group met for a total of one and a half days. The basic framework for each group meeting was essentially the same, but the flexible nature of the exercise meant that, in practice, different groups spent different amounts of time on the various activities. The group meetings were held in two centers, Kuala Lumpur and Kota Bharu, between 13 October and 11 November 1989.

The sessions for top managers, engineers, researchers, trainers and technical assistants were conducted entirely in English. In the sessions for technicians, irrigation inspectors and irrigation overseers, interpretation and translation into Bahasa Malaysia were provided by two Malaysian trainers. The written material (texts and forms) was provided in both languages.

The basic framework for each of the group sessions comprised five elements, as follows:

- * Presentation and discussion of the Analytical Framework for Irrigation Management;
- * Job analysis;
- * Review of job descriptions;

- * Identification of requirements (knowledge, attitudes and skills) and gaps in the performance of managerial activities in irrigation systems; and
- * Identification of constraints within the organization.

Each session began with an interactive exercise entitled 'Get to know each other' aiming to facilitate friendship and develop trust among participants to enable them to feel at ease.

The Analytical Framework for Irrigation Management, its presentation during the TNA and the comments and reactions of participants, are discussed in Chapter 4. The framework provided the conceptual basis for the job analysis and identification of requirements, described in subsequent chapters.

In the job analysis sessions, participants attempted to review the duties and tasks they performed and the working conditions, responsibilities and skills required. The results of the job analysis sessions for the core groups are described in detail in Chapter 5, while those for top managers, researchers and trainers are summarized in the chapters dealing with the separate sessions for these groups. In the next stage, participants were invited to review their own job descriptions and make suggestions for their improvement based on the job analysis. Chapter 5 describes the results of the job description sessions for the core groups, while those for the other three groups are again summarized in the appropriate chapters.

The identification of job requirements and constraints constituted the core of the training needs and organizational constraints assessment. It comprised an analysis by the participants of their managerial activities and the knowledge, attitudes and skills needed to perform them, and the identification of organizational constraints affecting their work. The way in which this activity was organized, and the results obtained in respect of the core groups, are described in detail in Chapter 6, while the involvement of top managers, researchers and trainers in this activity is discussed in the chapters dealing with these three groups.

PARTICIPANTS IN THE TNA

A total of 321 irrigation professionals, mainly DID staff, but including some from other government institutions, participated in the exercise. They included managers, engineers, technical assistants, technicians, irrigation inspectors, irrigation overseers, researchers and trainers. The distribution of the participants by category and employing institution is shown in Table 1.

Table 1. TNA participants, by staff category.

Category	Total no. involved in management	No. of TNA participants	Participants as percentage of total involved (%)
Top managers	25	19	76
Engineers	80	65	81
Technical assistants	70	45	51
Technicians	240	45	19
Irrigation inspectors	161	42	26
Irrigation overseers	529	78	15
Researchers ¹	-	16	-
Trainers ²	16	20	-
Total	1,121	321	29

Notes:

¹ Regarding *research* activities, DID does not have an established research program in irrigation management. Instead, MARDI develops agricultural research, which includes irrigation management. For the purpose of the TNA, the sample of researchers was composed of MARDI professionals and prospective researchers of the DID.

² With regard to *trainers*, a sample was drawn from DID and from MADA, KADA, UPM, MARDI, DOA, and INTAN. These institutions will probably be involved with DID in future training programs.

As noted above, personnel from other institutions were invited to participate to provide information on the performance of DID staff from the point of view of their own interaction with DID in their work. Their responses were not intended to reflect the training needs of their own institutions.

CONCLUSION

The aim of this chapter has been to provide a general overview of the TNA exercise in order to guide the reader through the more detailed descriptions of its main components in the remaining chapters of Part II. It is hoped that this brief outline has indicated the complex and wide-ranging nature of the exercise, which itself was only the first stage in the implementation of the complete training cycle in Malaysia. The remaining stages are described in Parts III and IV.

The training needs and organizational constraints assessment was only the first stage in the implementation of the complete training cycle.

CHAPTER 4

The Analytical Framework for Irrigation Management

INTRODUCTION

IN EACH OF the “core” group meetings, following the initial interactive exercise, the Analytical Framework for Irrigation Management was presented and discussed, and the distinction between managerial and technical activities explained.

The presentation began with a discussion of the nature of irrigation management and its importance for increasing and sustaining agricultural productivity and production in developing countries. Irrigation management was identified as a key area for research, development and training in the search for causes of underperformance and the search for opportunities to improve performance.

The Analytical Framework itself was then presented and analyzed, and participants were invited to analyze their own jobs in relation to the framework in order to assess their understanding of its basic concepts.

CONTENT OF THE ANALYTICAL FRAMEWORK

An outline of the basic content of the Analytical Framework is presented below. It should be noted that, when being presented to the various groups, both the outline and the examples used to illustrate it were suitably adapted to the needs and interests of the audience.

IRRIGATION MANAGEMENT

Importance of irrigation for increasing and sustaining agricultural productivity and production in developing countries.

Role of irrigated agriculture as the prime mover of socioeconomic development, employment generation, and poverty alleviation.

Performance of irrigation systems below their potential in terms of yields and efficiency of water use.

Inequitable water distribution and adverse consequences of irrigation like waterlogging and salinity.

Search for causes of underperformance and opportunities for improving performance.

Irrigation management identified as a key area for research, development and training.

Definition and elaboration of irrigation management (keywords: system, process, institutions, objectives, conditions, resources, effects, performance).

Major sectors in irrigation management: objectives, conditions, context, processes, renewal (IIMI 1992).

PHYSICAL AND MANAGEMENT DIMENSIONS

Physical process (water flow, etc.) and decision making regarding that process.

Physical conditions, physical activities, and physical results.

Management conditions, management activities, and management results.

Interrelationship of physical and management processes and the importance of feedback.

MANAGEMENT CONCERNS

In an organization, decisions are made at all levels and key decisions have both technical and managerial aspects.

Development and maintenance of capacities: Planning, design, construction of "hardware" such as physical structure, transportation facilities, information systems, and "software" like irrigation agency staff.

- * Strategic concerns: How to match desired objectives and available resources; and what to provide in view of future requirements and available resources (construction, maintenance and rehabilitation).
 - desired system objectives,
 - feasible system objectives,
 - functional system requirements (design concepts).
- * Conditioning concerns: How to develop the condition and the means to suit the functional system requirement; and what the construction should be, what manpower is necessary, what type of maintenance program and professional development program is necessary.

Utilization of the capacity: Operation.

- * Allocation concerns: Matching supply and demand; seasonal and in-seasonal allocation plans; i.e., decision making about water to different subsystems, cropping pattern and cropping calendar, areas to be commanded, monitoring and adjustments.
- * Water-flow regulation concerns: Effectuating the water flows in line with the allocations; i.e., operational methods and plans for structures and gates, regulating water flows and the levels.

MANAGEMENT OF ORGANIZATION

Organization and people; administrative structures and conditions.

Decision-making processes in the organization; information flows and control processes; management of interfaces (coordination).

Managing people and training for better performance; training and professional development in terms of knowledge, attitudes and skills.

Limitations of training: necessary but not sufficient.

Relative place with respect to other conditions and constraints.

In summary, the Analytical Framework identifies key decisions regarding water delivery. It focuses on the processes of decision making in an organization, which may not necessarily reflect its formal organizational structure. Two main groups of decision-making processes are identified; those relating to the development of irrigation capacities -- the physical infrastructure, manpower, information systems, and so on -- and those related to the utilization of these capacities in delivering water to users.

The Analytical Framework for Irrigation Management identifies key decisions regarding water delivery. It focuses on the processes of decision making in an irrigation organization.

The framework identifies thirteen "areas of concern" reflecting key decisions which must be made in order to ensure that an irrigation system or organization fulfills its objectives and reaches a desired level of performance. These "areas of concern" provided the basis for much of the discussion in the group exercises during the TNA. They are as follows:

DEVELOPMENT OF IRRIGATION CAPACITIES

- * Determination of desired system objectives;
- * Determination of feasible system objectives;
- * Determination of functional system requirements;
- * Determination of technical requirements of storage canals and structures;
- * Determination of a maintenance plan;
- * Determination of technical staff requirements and selection;
- * Determination of professional development requirements;
- * Actual execution and monitoring of construction and maintenance activities; and
- * Other jobs.

UTILIZATION OF IRRIGATION CAPACITIES

- * Seasonal water management planning;
- * In-seasonal water management: matching of supply and demand;
- * Operational plan for water-flow regulation; and
- * Operational methods of individual structures.

PRESENTATION AND DISCUSSION OF THE ANALYTICAL FRAMEWORK

It was pointed out that, in relation to the development of irrigation capacities, the management concerns itself strategically with the planning, design and construction of systems, including the provision of the requirements necessary to sustain available resources, achievement of desired system objectives and fulfillment of the functional system requirements (design concepts). In this regard, the management is also concerned with such things as construction projects and manpower levels necessary to attain system objectives, and with determining the types of maintenance programs and professional development programs necessary to achieve the organization's objectives.

In relation to the utilization of irrigation capacities, the management is concerned with allocation problems, cropping patterns and cropping calendars, areas to be irrigated, and monitoring and adjustments to irrigation systems. Managers are also concerned with water-flow regulation problems such as effecting water flow in line with the

allocations — that is, with operational methods and plans — and with the predictability of events that influence the stability of water flow.

Finally, the question of management organization and control was discussed. This includes, first and foremost, people and the administrative structures and conditions under which they work. Other issues explored were the decision-making processes of the organization, the information flows and the control processes, the management of coordination, managing people, and training for better performance.

The degree of elaboration and depth of treatment during the presentations varied according to the jobs, functions and experiences of the participants in the various groups. The issues were treated in depth for the groups of top managers, engineers, researchers and trainers, but less elaborately for technical assistants, technicians and irrigation inspectors, and in an even more simple manner for irrigation overseers. In each session, an attempt was made to illustrate the concepts with examples related to the duties and functions of the group concerned. A Bahasa Malaysia interpretation was provided for the irrigation inspectors, technicians and irrigation overseers.

The group discussions were generally in two parts. First, there were questions of a general nature on irrigation management concepts; secondly, volunteers among the participants described their jobs, functions, and duties and attempted to identify their technical and management dimensions.

ANALYSIS OF GROUP DISCUSSIONS

The level and content of the questions raised, and of the discussions that followed, varied somewhat, depending on the nature of the group. Some issues raised were of a very substantial nature and were clearly based on the experience of the persons concerned. Several participants expressed interest in knowing if the irrigation management concept and the Analytical Framework had been applied elsewhere and if any case histories existed.

Some participants who had management education or experience were more appreciative of the management concepts and their relevance. Irrigation inspectors and overseers, whose duties brought them into close contact with farmers and other people, displayed great awareness of the management dimensions of irrigation, especially those concerning human relations and the resolution of conflicts.

A few participants were frankly cynical and questioned if management concepts and principles had any relevance to irrigation because of political interference and the consequent difficulties they experienced in performing their duties fairly.

On the basis of the analysis of their own jobs in relation to the framework, it was clear that the participants' understanding of the technical and managerial aspects of their own jobs varied widely. Some participants changed their initial assessments after the discussion, when they realized that the management content of their jobs was much greater than they had thought it to be at first.

It was observed that few groups reacted to the questions about irrigation management which were raised immediately after the concept was presented to them. In general, participants felt uncomfortable about discussing the concept and avoided expressing their thoughts and doubts. This behavior was not observed, however, among the top

managers or the researchers, who responded spontaneously to this subject and raised many questions.

CONCLUSION

This session, in which the Analytical Framework for Irrigation Management and the distinction between managerial and technical activities were discussed in depth, was the key to ensuring the effectiveness of the TNA. Lack of understanding of the concept of irrigation management and of the managerial and technical aspects of irrigation jobs would otherwise have made it difficult for participants to assess their own managerial shortcomings and to discuss them confidently during subsequent stages.

The extent to which this stage in the process achieved its objectives may be assessed from the comments made by participants at the end of the exercise. Many comments expressed appreciation of the opportunity to learn to understand the differences between the managerial and technical aspects of irrigation jobs. More generally, several participants felt that this session had helped to improve their understanding of the nature and role of management in irrigation systems and to expose them to new ideas in management. The opportunity to review the concepts of irrigation management and to share ideas with irrigation management specialists had helped some participants to appreciate the importance of management in their own jobs, while one participant commented that the meeting had illustrated the need for careful study before conducting research in irrigation management.

In addition to these unstructured responses, participants were invited to evaluate the extent to which this session had achieved its objective of reviewing the concept of irrigation management, on a scale from 1 (low: objectives not achieved) to 5 (high: objectives achieved very well). The aggregated responses from all five "core" staff categories showed that the objective was considered to have been achieved well above average, with a weighted average score of 4.13. With regard to the three "non-core" groups, responses from trainers produced a weighted average of 4.0, indicating that they considered the objectives to have been well achieved. Researchers, who produced a weighted average of 3.92, were somewhat less satisfied, while top managers, with a weighted average of 3.8, were least convinced that the session which was devoted to discuss the concept of irrigation management had achieved its objectives, though this score still indicates a reasonably satisfactory level of achievement.

The discussion of the Analytical Framework and of the distinction between managerial and technical activities was the key to ensuring the effectiveness of the TNA.

CHAPTER 5

Job Analysis and Job Descriptions

INTRODUCTION

ALTHOUGH THESE TWO sessions were conducted separately, they are considered together here for convenience. The job analysis session was designed to build on the presentation and discussion of the Analytical Framework for Irrigation Management by helping participants to analyze their own jobs in terms of managerial and technical aspects, performance, and the duties and tasks involved. This was intended to provide the basis for evaluating their own job descriptions in the second session, and subsequently for identifying gaps in their own managerial knowledge and attitudes which could be addressed under a training program. The basic framework for the job analysis session was provided by the thirteen areas of concern identified in the Analytical Framework.

OBJECTIVES OF THE JOB ANALYSIS SESSION

The main objectives of this session were:

- * To determine the extent to which participants had understood the Analytical Framework for Irrigation Management in terms of:
 - managerial and technical aspects of irrigation management
 - the nature and scope of the thirteen areas of concern; and
- * To help participants understand the distinction between jobs, duties and tasks.

A secondary objective was to obtain a general overview of the jobs, duties and tasks performed by participants, of the criteria used to assess their performance and the constraints affecting performance, as well as suggestions from participants on how their performance could be improved.

At this stage, the aim was not to obtain substantive information on gaps in managerial or technical knowledge and attitudes for use in planning training activities, but to develop in the participants the ability to analyze their jobs effectively so as to be able to provide this information at a later stage.

PRESENTATION AND METHODOLOGY OF THE JOB ANALYSIS SESSION

The objectives of the session, its place in the overall TNA procedure, and the techniques to be used, were explained to participants at the outset. The thirteen areas of concern in the Analytical Framework were then discussed in detail.

The basic methodology described below was applied in principle in job analysis sessions for all eight categories of participants, although minor modifications were introduced in the sessions for top managers, researchers and trainers. These modifications, and the results obtained from these three categories, are described in the appropriate chapters below. This chapter is concerned only with the results obtained from the five "core" categories -- engineers, technical assistants, technicians, irrigation inspectors and irrigation overseers.

Each job analysis session was organized in two stages, corresponding to the two main objectives mentioned above. Stage 1 was concerned with the analysis of the participants' jobs in terms of managerial and technical aspects, performance and constraints, while Stage 2 involved the analysis of duties and tasks.

Two instruments were designed to collect information during this session. The first, the *Format for Self-Analysis of Irrigation Management Jobs*, was designed for use in Stage 1. The second, the *Job Analysis* form, was intended for use in Stage 2. The use made of each of these instruments, and the results obtained in each case, are described and analyzed below.

ANALYSIS OF MANAGERIAL AND TECHNICAL ASPECTS, PERFORMANCE AND CONSTRAINTS

At the beginning of Stage 1, two or three participants in each group were invited to describe in general terms their jobs as irrigation managers. The facilitator then helped them to analyze their jobs in terms of the managerial and technical activities involved, in order to prepare the group as a whole for the task of completing the *Format for Self-Analysis of Irrigation Management Jobs*.

All the participants were then invited to select, from the thirteen areas of concern, one with which they were particularly involved, and in this context, record their responses on the *Format for Self-Analysis*, to analyze, discuss and describe:

- * The nature of their involvement in the job related to the chosen area of concern;

- * The technical and managerial aspects of the job;
- * How their technical performance and managerial performance were assessed by their superiors;
- * Any opportunities they could see for improving both technical and managerial performance; and
- * Existing technical and managerial constraints.

The participants were supposed to work in pairs, with partners who had chosen the same area of concern; however, if such a partner could not be found, they were allowed to work on their own.

While the main concern of this exercise was to help participants to develop the skills of analyzing their jobs rather than to produce substantive results, the extent to which different groups of participants selected different areas of concern as the basis for their analysis was of some interest.

While 46 percent of all participants selected areas of concern related to utilization, and 54 percent selected those related to development, there were marked differences between the different categories of participants. The great majority of engineers, technical assistants and technicians chose areas related to development, while most of the irrigation inspectors and overseers preferred those concerned with utilization.

The main concern of this exercise was to help participants to develop the skills of analyzing their jobs.

Within these two fields, some specific areas of concern were selected by several participants, while others were largely neglected. Thus, more than half of those concerned with aspects of utilization chose to respond on "in-seasonal water management matching of supply and demand," while only one participant dealt with "operational plan for water flow regulators." In the field of developing irrigation capacities, 46 percent of participants selected "actual execution and monitoring of construction and maintenance activities" as their area of concern, while 50 percent named "other jobs" and only one participant selected "determination of professional development requirements."

The first question on the *Format for Self-Analysis of Irrigation Management Jobs* asked participants to state what their job was, within the context of their chosen area of concern. The responses showed that, in general, all categories understood what each area of concern was meant to include. However, some engineers, technical assistants, technicians and overseers included aspects of planning and design under the area of "other jobs" or "technical requirements", showing that they had not fully understood the scope of these areas or of those concerned with "general objectives" and "system functions," where these topics should have been placed. Irrigation inspectors also showed a good understanding of the different areas of concern, but irrigation overseers

often confused decision making on allocation and water-flow regulation with maintenance activities.

The second question on the *Format for Self-Analysis* asked participants to identify the technical and managerial aspects of their jobs. All categories were able to distinguish between these two aspects of their work with little difficulty. The two most frequently cited examples of managerial activities were staff management and meetings, each of which was referred to by members of all five core categories.

Question 3 asked participants how their technical performance and managerial performance in their chosen area of concern were assessed.

With regard to technical performance, many of the responses from the engineers, technical assistants and technicians were rather vague, indicating that the question had not been properly understood. The irrigation inspectors and overseers, by contrast, seemed to understand the question reasonably well, but their responses were more concerned with qualitative, rather than quantitative, performance indicators.

*Managerial performance would be improved by
obtaining the cooperation of farmers and workers,
and if the staff were to cooperate as a team.*

As regards managerial performance, the responses from all five categories were rather unsatisfactory. Most of them did not answer the question properly, apparently because many of them did not really understand it. The irrigation inspectors and overseers, in particular, seemed to confuse this question with the previous one on technical performance assessment.

The only technical performance indicator mentioned by all five core categories was the level of complaints, whether from the public in general, from farmers or from other workers. All five categories considered the level of complaints also to be a valid indicator of managerial performance.

Question 4 also dealt separately with technical and managerial aspects, asking participants if they could identify opportunities for the improvement of performance in either respect in their chosen area of concern. All five core categories considered that training would provide opportunities for improving technical performance, and various actions in respect of staffing and staff management were identified as possible means of improving managerial performance.

Question 5 asked participants to identify, first the technical, and second, the managerial, constraints on their performance. Lack of funds, lack of equipment and lack of staff were identified by all five categories as serious constraints. The two major areas of managerial constraints were concerned with staffing matters and relationships with farmers.

SUBSTANTIVE CONTENT OF RESPONSES IN THE JOB ANALYSIS SESSION

Although the main aim of this exercise was to help the participants to learn how to analyze their own jobs, rather than to identify specific areas of concern for inclusion in any subsequent training program (this was the concern of the next stage in the process, the analysis of gaps in managerial knowledge and attitudes), a review of the main points arising from the job analysis reveals a substantial degree of agreement on basic issues, which are summarized below as an indication of the pressing concerns of DID staff.

These may be broadly divided into managerial and technical concerns, although some responses in both categories referred to the other dimension of the topic being discussed.

Interaction and Cooperation

Various forms of interaction, with the general public, water users, staff and other agencies, were mentioned by four of the five core staff categories as aspects of their managerial responsibilities.

Three categories referred to aspects of cooperation, including cooperation with contractors and between farmers and staff, as performance indicators. The irrigation overseers considered that managerial performance would be improved by obtaining the cooperation of farmers and workers, and if the staff were to cooperate as a team.

Relationships with other agencies were identified as a managerial constraint by four categories. Only the irrigation overseers did not mention this topic. Both the engineers and the irrigation inspectors referred in general terms to the lack of cooperation from other agencies, while the technical assistants specifically mentioned the difficulty in obtaining information from other agencies and the technicians referred to a lack of clear understanding on how to follow and set procedures in frequent dealings with other agencies.

Meetings

One of the two main kinds of managerial activity, referred to by members of all five core categories, was involvement in meetings.

The engineers referred to conducting site meetings and meeting landowners as part of their managerial duties, while irrigation overseers also made specific reference to "discussion with farmers". Irrigation inspectors considered both organizing and attending meetings to be part of their managerial work, while technicians mentioned only "attendance at meetings" in this regard. The overseers suggested that meetings should be held with farmers from time to time as a means of improving managerial performance, while the technical assistants also regarded farmers' absence from meetings causing delays in planting activities, and the distribution of water, in this light.

Staffing

Staffing and staff relationships emerged as a major area of concern for most participants.

One of the two most frequently cited examples of managerial activity was staff management, which was referred to by members of all five core categories. All of them also identified aspects of staff relationships as indicators of managerial performance. Actions in respect of staffing and staff management were identified by all five categories as a means of improving managerial performance, and staffing was one of the two major areas of managerial constraints.

All five core categories identified the lack of staff as a serious constraint, while both engineers and irrigation overseers also considered it to be a managerial constraint. The engineers identified a need for more field staff and the optional retirement of "dead-wood" as a means of improving management performance.

The five core categories all considered aspects of staff behavior and, in particular, the interaction between staff at different levels, to be significant management constraints.

Various measures of the quality of the relationship between superiors and subordinates were identified by all five categories as indicators of management performance, and all of them, except the engineers, called for a closer relationship and more two-way discussions between superiors and subordinates as a means of improving management performance. The technical assistants called for more responsibility to be given to subordinates, while the technicians complained that they had no power to make decisions due to a lack of trust on the part of their superiors. The overseers asked that their superiors should not make them feel less important and the irrigation overseers suggested that subordinates should make their opinions known to the engineers.

In identifying the technical and managerial aspects of their work, the engineers considered "coordinating and guiding staff" as a managerial activity, and both they and the irrigation overseers -- interestingly, the categories at the top and bottom of the administrative hierarchy -- considered that "motivating subordinates" also fell into this category. All five categories referred to the lack of motivation of staff as a managerial constraint and both the technical assistants and the technicians suggested the provision of incentives, rewards and recognition for good work as a means of improving managerial performance.

Staffing and staff relationships emerged as a major area of concern for most participants.

In the analysis of technical and managerial activities, supervisory responsibilities were mentioned by three of the five categories. Both technicians and irrigation inspectors cited "supervision and monitoring of work done" as one of their managerial responsibilities, while the irrigation overseers again named the most specific task in this group, that of "supervising water deliveries." Technical assistants, technicians and irrigation inspectors all cited "giving instructions to subordinates" as one of their managerial activities, while at the same time considering the acceptance of instructions from superiors as an indicator of both technical and managerial performance. The technical assistants called for full-time supervision as a means of improving managerial performance.

Indifference, lack of interest and neglect were mentioned as managerial constraints by three categories. The technical assistants and irrigation inspectors, for example, felt there was a lack of interest in their problems on the part of their superiors.

Two categories referred to a lack of technical knowledge, experience and skills, particularly on the part of field staff and other subordinates as a technical constraint, while three considered that the level of their own knowledge and abilities provided indicators of technical performance, and the irrigation inspectors identified their own lack of extension and management knowledge as a managerial constraint.

Staff Training

In the analysis of technical and managerial aspects, the only direct reference to staff training came from the irrigation overseers, who mentioned "training gatekeepers" as one of their managerial activities. However, all five core categories considered that training would help to improve technical performance, and four of them also thought it would improve managerial performance. Training problems were considered as a managerial constraint only by one group, the engineers, who referred, first to the limited opportunities to attend nontechnical courses and those locally available, and second, to the fact that supervisors were not trained to evaluate performance.

In the field of technical training, the engineers called for opportunities to attend training courses in general and, more specifically, courses in computer programming, water management, functions of structures and related hydraulics, and the latest design techniques. Technical assistants identified a need for the training of both staff and farmers, while technicians referred to a general need to upgrade technical skills. Both irrigation inspectors and irrigation overseers called for intensive courses on water-delivery distribution and the operation of gates, while the inspectors also proposed that study tours of successful areas should be organized.

In the area of management training, the engineers called for training in human resource development and managerial techniques, while the technical assistants identified a need for management training and both the irrigation inspectors and the irrigation overseers referred to a need for courses on management and extension techniques.

The engineers specifically proposed the involvement of operations staff in extension work and the training of farmers, while the irrigation inspectors recognized a need to conduct discussions and seminars on users' involvement. The engineers also referred to the need for training regarding the enforcement of the laws regarding planting.

Resources

Apart from staff, other basic resources mentioned by the participants were finance and equipment.

All five core categories identified the lack of funds as a technical constraint, while the engineers, technical assistants and technicians also considered it to be a managerial constraint.

The five core categories also identified the lack of equipment as a constraint, while breakdowns of equipment, specifically of pumps and radio communication systems,

were also mentioned in this connection by two of them. The provision of more and better equipment was identified by four categories as a means of improving technical performance. Technical assistants specifically mentioned equipment for measuring or gauging water duty, while technicians referred in general terms to the need for sufficient equipment and work force, and more specifically for adequate communication equipment. They also noted a need for more use of computers. The irrigation inspectors called for the recycling of pumps and the use of electrical pumps, while irrigation overseers referred in more general terms to the need to use modern equipment or new technology.

Relationships with Water Users

In analyzing the technical and managerial aspects of their work, engineers, technical assistants and overseers identified various forms of interaction with water users as part of their managerial duties.

All five core categories considered the level of complaints, from the public in general, from farmers or from other workers, as valid indicators of both technical and managerial performance, while irrigation inspectors considered the level of cooperation between farmers and staff as an indicator of managerial performance.

The technical assistants regarded the training of farmers as a means of improving technical performance, while the establishment of closer relationships with users was considered by the other four categories as a means of improving managerial performance. In this regard, the engineers referred specifically to the need for more involvement of water users, the general public and other government departments during the planning, design, construction and maintenance phases of irrigation projects, while the overseers called for farmers to be given explanation and guidance on the effective use of water and the inspectors felt that farmers should be given more information on the importance of following water schedules and on irrigation facilities.

More involvement of water users in irrigation projects would bring about improvements in managerial performance.

The technical assistants referred to the farmers' lack of proper water-management techniques as a technical constraint, while the irrigation overseers considered farmers' attitudes in general in this light. One of the two major areas of managerial constraints was that concerned with relationships with farmers. Only the technical assistants did not make any reference to a lack of cooperation or of interest, understanding, responsibility or motivation, on the part of farmers as a serious managerial constraint. A number of specific problems were mentioned, including: the unwillingness and inability of farmers to adhere to fixed schedules; farmers' absence from meetings causing delays in planting activities and the distribution of water; farmers being impatient in getting water; and farmers' difficulties in following instructions.

The farmers were not considered to be solely responsible for these problems, however; the technical assistants referred to the failure of agencies to meet the requirements of

farmers in transplanting activities within a specified period, while the irrigation inspectors mentioned the lack of a campaign to ensure uniformity of planting as a managerial constraint.

Water Management and Use

Three of the core categories identified aspects of water supply as technical performance indicators. They identified actions in respect of water management and water supply as a means of improving technical performance. The technical assistants proposed more flexible water management programs while the technicians called for the utilization of daily rainfall for additional supply. The irrigation overseers identified a need for the collection of water level data in canals and fields and the investigation of areas that receive water late.

Political interference was identified as a managerial constraint by all categories of staff.

Four categories of staff -- the technical assistants, technicians, irrigation inspectors and irrigation overseers -- also noted various aspects of scheduling as key indicators of technical performance. The technical assistants referred specifically to "completion of work within a set time" and "adherence to schedules and specifications," while both irrigation inspectors and irrigation overseers also identified adherence to schedules as important. "Data collection within a specified time" was mentioned by the technicians. The irrigation inspectors considered adherence to the planting schedule as a means of improving technical performance, while the technical assistants considered the unwillingness and inability of farmers to adhere to fixed schedules as a managerial constraint. The technical assistants also identified farmers' absence from meetings causing delays in planting activities and the distribution of water, and the failure of agencies to meet the requirements of farmers in transplanting activities within a specified period, as managerial constraints.

Planning, Design and Construction, and Operation and Maintenance

The engineers suggested that more involvement of water users, the general public and other government departments during the planning, design, construction and maintenance phases of irrigation projects would bring about improvements in managerial performance.

To improve technical performance, the technical assistants called for better knowledge of designing, while the technicians pointed out that a designer must understand the site conditions of the irrigation area. Three categories identified faulty designing as a technical constraint.

With regard to structures, the technicians and irrigation overseers considered that having all structures in good working condition at all times would constitute a

satisfactory technical performance indicator. To improve technical performance, the irrigation inspectors and overseers called for the modification of unsuitable structures, while the inspectors proposed the increase of freeboard by topping up of bunds and the overseers suggested canal lining so that water supply could be more easily controlled. The overseers also noted the need for "ensuring the suitability of structures from time to time." The technicians referred to "dirty canals" as a technical constraint.

With regard to operation and maintenance, the technicians considered that technical performance could be improved by better methods of gate operation and preventive maintenance, while the overseers mentioned the need to repair faulty pumps and structures. Both the technicians and the irrigation inspectors felt that managerial performance would be improved by more frequent site visits and checks, while the overseers referred specifically to the need to visit and check pumps from time to time.

Manuals

One category identified the provision of an operation and maintenance manual as an indicator of technical performance, while three others identified a need for manuals of various kinds to improve technical performance. The technical assistants called for O&M manuals for specific schemes, while the irrigation inspectors suggested that a complete water management manual be provided. The overseers, too, called for the preparation of operation manuals.

Data

Four categories of staff, technical assistants, technicians, irrigation inspectors and irrigation overseers, referred to aspects of the accuracy of data, reports and calculations, including the methods used in analyzing the data, the steps taken to overcome any technical problems and the timeliness of data as technical performance indicators. The engineers considered the lack of data and of systematic methods of data collection as managerial constraints, while the irrigation inspectors referred to the lack of a database.

Political Interference

Political interference was identified as a managerial constraint by all five categories, with the irrigation inspectors and overseers also complaining of interference from the public.

Other Topics

Other topics identified by some of the categories included: vandalism, specifically of structures and water-level recorders; the lack of implementation of relevant legislation; and lack of time, due to the need to perform a great number of tasks, which leads to a decrease in the quality of the work done.

ANALYSIS OF DUTIES AND TASKS

At the beginning of Stage 2 of the job analysis session, the facilitators explained the meanings of the terms, "job," "duties" and "tasks" and presented examples for discussion among the participants. A *job* was defined as a collection of major duties which comprise the responsibilities of a staff position. A *duty* is a segment of the work performed in a job, usually comprising several tasks. A *task* is a distinct, identifiable work activity which comprises a logical and necessary step in the performance of the duty.

The participants were asked to name two major duties which formed part of their own jobs, and to identify the specific tasks involved in each case. They recorded their responses on the *Job Analysis* form, working either in small groups or individually, depending upon the extent to which different participants selected similar jobs for analysis. At the end of this exercise, the results were reported selectively by two or three volunteer participants and discussed in a plenary session.

The responses to the *Job Analysis* form were quite satisfactory and showed a good level of understanding among the participants with regard to their duties and tasks.

Some examples of the lists of main duties identified by each of the core categories of staff, along with the tasks related to them, are given below, expressed in the participants' own words.

ENGINEERS

Main duty: *Planning and design.*

Tasks: Receive requests for jobs, projects, instruction, etc.

Schedule information from superiors.

Investigate requests from the applicants and identify problems.

Preliminary study of proposed project (site visits, etc.).

Pre-feasibility studies, preparation of project briefs and collection of relevant data.

Surveys and investigations: supervision of survey works done either departmentally or by licensed surveyors.

Planning and design (calculations, drawings, etc.).

Liaise and coordinate with other units, agencies, target groups, etc.

Prepare and submit land acquisition plans and monitor progress.

Prepare tender documents and call tenders.

Evaluate and award tenders on the recommendation of the Tender Board.

Conduct meetings and discussions with staff, other agencies and target groups.

Get feedback from all concerned on the proposed plans.

Request project allocation/prepare cost estimate.

TECHNICAL ASSISTANTS

Main duty: Tenders and contracts.

Tasks: Assist engineers in designing channels, in discharge measurement and in preparing plans.

Prepare tender documents or quotation notices.

Check plans.

Supervise projects with help of technicians, till completion.

Prepare report on progress and payments.

Report and discuss site problems with engineers.

Collect data.

Visit sites in areas reported on.

Determine allocations.

Design and estimate costs to call tenders.

Instruct technicians on supervision and construction work.

Spot-check project construction works.

Call Tender Board meetings.

Call selected contractors.

TECHNICIANS

Main duty: Supervision of construction work on buildings quarters.

Tasks:

- Land acquisition.
- Site clearing.
- Site filling.
- Preparation of plans.
- Selection of suitable locations.
- Inspection of concrete works, etc.
- Carrying out slump and cube tests.
- Supervision of works according to plan, till completion.
- Rectifying matters concerning contractors.
- Giving/briefing/explaining instructions to contractors.
- Planning and determining area.
- Determining material specifications.
- Forwarding plans to Technical Assistant or Engineer.
- Preparation of plans and tender documents.

IRRIGATION INSPECTORS

Main duty: Operation and maintenance.

Tasks:

- Ensure performance of work as scheduled (e.g., clearing of canals, ensuring good condition of structures, supply water as scheduled, etc.) by interacting with subordinates and checking work done.
- Receive and investigate complaints and prepare reports on maintenance requirements.
- Interact with and discuss field problems with farmers or village leaders/heads and other agencies.
- Prepare yearly reports and crop plans for the whole scheme.
- Prepare the framework sample plan for work on crop-cutting surveys (CCS) and supervise CCS work.

Prepare yearly work programs and estimates for operation and maintenance.

Provide an advisory service and information to farmers/extension workers.

IRRIGATION OVERSEERS

Main duty: Supervision of gatekeepers.

- Tasks:*
- Give guidance to gatekeepers on gate operation.
 - Ensure that gate settings meet requirements of the area.
 - Ensure that readings are taken by gatekeepers regularly.
 - Ensure that no losses take place.
 - Ensure cleanliness of area near structures.
 - Give instructions to gatekeepers on supply.
 - Identify planted areas.
 - Obtain crop water requirements to determine supply.
 - Ensure maintenance of structures.
 - Identify problem areas.

RESULTS OF THE JOB ANALYSIS SESSION

The positive results of this session were ensured by the previous discussion of the Analytical Framework for Irrigation Management, which helped participants to become aware of the concept of irrigation management and its technical and managerial aspects.

At the end of the job analysis session, the results of both group and individual analyses of duties and tasks, and methods of assessing performance, showed that participants had achieved a good level of understanding of the differences between the managerial and technical aspects of irrigation activities and the weaknesses of their organizations, in assessing their performance and in providing training to improve managerial skills.

This session helped the participants to realize that, in general, between 60 and 80 percent of their work time was spent in managerial activities.

EVALUATION OF JOB DESCRIPTIONS

In this session, the official job descriptions of DID staff in different categories were presented to the participants for analysis and review. The participants were invited to study the duties and functions listed in their own job descriptions and to confirm which of them they were actually assuming in their present jobs, and which they were not. They were invited to identify any additional duties they had which were not included in their job descriptions.

The session aimed to give the participants the opportunity of becoming acquainted with their own job descriptions and making suggestions for improvement if necessary. A DID document *Functions and job descriptions of irrigation managers* was presented to the participants, who were asked to make suggestions for improving it, using a worksheet provided.

Unfortunately, this session was not very successful. Lack of time prevented the participants from discussing their job descriptions in the classroom, and as a result, few forms were returned. Nevertheless, the participants' contributions provided some useful suggestions which could help DID to improve the job descriptions of different categories of staff.

PROPOSALS FOR IMPROVING JOB DESCRIPTIONS

A selection of the suggestions put forward by the various categories of participants as to what should be included in their job descriptions is presented below.

The engineers considered that the list of duties stated in their job descriptions should be extended to include, for example, those of general office administrator, overall financial manager and inter- and intra-agency coordinator. Some of the tasks to be performed in connection with these duties included: attending state- or district-level functions, e.g., royal functions and VIP visits; staff administration; preparing budgets; developing overall supervision of contract administration; acting as a public relations officer for the department at the district level; supervising and monitoring the work done by contractors; preparing progress reports and monthly progress payments; and attending meetings and preparing correspondence.

The technical assistants considered that their duties should include those of trainer or lecturer, irrigation and drainage officer, supervisor of survey works, operation and maintenance officer, and head of department at district level. Some of their major tasks were: responding directly to the District Engineer; managing land acquisition; supervising structural design, or planning and designing works; managing the operation and maintenance of departmental vehicles and machines; monitoring the utilization of vehicles; and facilitating and conducting courses.

The technicians thought their duties should include: acting as assistant to the Superintendent, the Divisional Engineer and the Supervisory Officer; supervising construction works and workers; and coordinating surveys and investigations. Their major tasks would include: supervising the construction of minor irrigation schemes; providing training; supervising the collection of hydrological data; and coordinating the maintenance of an irrigation scheme.

Participants spent between 60 and 80 percent of their work time in managerial activities.

The irrigation inspectors considered that their duties should include: acting as assistant to the Technical Assistants, managing the enforcement of the Irrigation Ordinance, interagency coordination and acting as operation and maintenance officer. Their major tasks in respect of these duties would include: preparing operation and maintenance estimates and programs; supervising and checking crop-cutting survey works done by the Irrigation Overseers; coordinating with other agencies and other units (stores, mechanical, etc.); assisting the District Engineer in the investigation and preparation of reports on the application for land conversion process and other land matters; managing the operation and maintenance of the irrigation area; attending meetings at area level; performing survey works if necessary; and studying the current rainfall data.

The irrigation overseers felt that their duties should include: acting as Maintenance (Irrigation) Officer; managing irrigation and drainage schemes at field level; assisting the Irrigation Inspectors in managing the irrigation area; and supervising contracts. The major tasks connected with these duties were: conducting maintenance and operation services in the irrigated area; maintaining site offices and stores, including all materials, tools and equipment; maintaining an 8-chain sheet plan of their own areas with all irrigation and drainage networks, structures, compartments, blocks or units and kampong, rice areas, and access roads marked; maintaining hydrological records, including records of water levels and flood and drought reports; checking and compiling programs of works; and costing of maintenance works, emergency repair works and improvement works.

CONCLUSION

It was noted during the evaluation of job descriptions that many participants appeared to be seeing their own summary job descriptions for the first time, and that most of the suggestions for improvements came from technicians and technical assistants, whose job descriptions were not very clear.

One participant made detailed comments on the job description exercise which seemed to be of general application. He pointed out that, except for training, no other management functions or duties were listed in the job descriptions for DID irrigation managers. To be effective and efficient, irrigation managers must realize that their roles include nontechnical functions and duties, which they must be adequately oriented to

perform. These other functions included product and clientele development and management, comprising public relations, development of "product" design, quality, performance, utility, and so on.

Even though the evaluation of job descriptions was not very successful due to time constraints and the small number of returned forms, the inputs and comments given by the participants proved that it was a useful exercise in that it enabled participants to become aware of the scope of their responsibilities within DID. It also helped both the participants and DID to realize that job descriptions function as terms of reference between employer and employee, and that they should be clear enough to raise feasible expectations on the part of the organization and its staff as well.

The main lesson learned from the evaluation of job descriptions was that the job description lists should be provided to the TNA participants and enough time should be scheduled for them to discuss and improve them during the session, instead of doing this as "homework" as in the present case.

Irrigation managers must realize that their roles include nontechnical functions and duties, which they must be adequately oriented to perform.

CHAPTER 6

Managerial Knowledge, Attitudes and Skills, and Organizational Constraints

INTRODUCTION

THIS SESSION CONSTITUTED the core of the TNA exercise, and involved the identification by participants of the managerial knowledge, attitudes and skills required to perform their own jobs and the organizational constraints affecting their performance.

OBJECTIVES OF THE SESSION

The objectives of this session were:

- * To help participants to interpret their day-to-day managerial activities in terms of knowledge, attitudes (and skills) in order to identify gaps which would need to be addressed by any future training program;
- * To promote an awareness among participants of the factors which prevent them from achieving the organization's objectives; and
- * To encourage them to propose possible solutions for the problems.

PRESENTATION AND METHODOLOGY

The concepts of the three domains of learning and of knowledge, attitudes and skills, outlined below, were introduced and discussed. The methodology to be applied in this stage of the exercise, comprising the brainstorming technique and a modified Nominal Group Technique, were also presented and explained.

Following the presentation, the participants were invited, first, to identify the managerial knowledge and attitudes necessary to perform their jobs, and secondly, to present, analyze and discuss the existing gaps in their knowledge and attitudes.

The analysis of the managerial knowledge and attitudes needed by participants in their own jobs was carried out using the brainstorming technique. The assessment of the gaps or shortcomings in the participants' managerial knowledge and attitudes was undertaken through a modified form of the Nominal Group Technique, through which participants "nominate" problems in a noninteractive way, with the aim of arriving at a group decision. This technique brings people together to provide information which is combined in a structured format.

One session in the program for each group was set aside for the discussion of organizational constraints. The concept of organizational constraints was presented and discussed and the main areas in which such constraints may arise were identified, as described below. The participants were invited to identify two or three constraints which were affecting their own performance together with suggestions for overcoming them. The participants did this exercise either individually or in pairs. Long lists of constraints were produced, as described below.

CONCEPTUAL BASIS FOR THE SESSION

The conceptual basis for this session was provided by the basic domains of human learning and the concepts of knowledge, attitudes and skills as related to managerial performance.

The three basic domains of human learning are:

- * The cognitive, theoretical or intellectual domain;
- * The affective or humanistic domain; and
- * The psychomotor, manipulative or skill development domain.

The level of competence of a manager is assessed by taking into account his level of development in these three domains. In irrigation management, for example, there is a variety of abilities or skills (using the term in its general sense) which belong to the cognitive domain, such as how to make decisions, how to establish criteria, and so on. This domain involves remembering or reproducing something which has been learnt. Knowledge therefore belongs to this domain.

The affective domain includes attitudes, values, appreciation, and so on. This domain involves feelings and emotions. Managers of irrigation systems are expected to be committed to achieving good system performance, to be honest in taking and reporting valid data, and so on.

The psychomotor domain includes manipulative performance or action requiring neuromuscular coordination such as using computers, opening and closing gates, designing canals, and so on.

The affective domain is recognized as the most sensitive one, which makes its development the more difficult. Research shows that even among social science professionals there is a lack of human relation skills, which belong to this domain. In

their dealings with others they may be false rather than genuine; may fail to show basic warmth and respect for others; and so on.

Most managers of irrigation systems are engineers, agronomists, and other technical professionals who have not been exposed to the development of the affective domain at all. Their formal education has failed to stimulate them to grow in this respect. In planning management training for irrigation professionals, it is therefore necessary to provide special exercises designed to help them to develop this domain in terms of positive attitudes, motivation, self-confidence, and so on, in addition to the managerial knowledge and manipulative skills which are also very necessary for improving their job performance.

In the context of this exercise, knowledge, attitudes and skills (Kubr 1989), are defined as follows:

* **Knowledge**

is retained information concerning facts, concepts, and relationships

for example, the concept of irrigation management; knowledge of methods of measuring water flow; the concept of farmer-managed irrigation systems; feedback (concept, how to give and receive); definition of decision-making process; and so on.

* **Attitudes**

consist of feelings or statements for or against certain issues; they reflect the predisposition of individuals to view their jobs, other people, and the work in a certain way, and are reflected in people's behavior

for example, responsiveness; flexibility; self-confidence; adaptability; tact; etc.

* **Skills**

are the abilities to do things effectively; apply knowledge and personal aptitudes and attitudes in work situations; these are also known as "soft" skills

for example, conducting meetings; giving and receiving feedback; listening skills; and so on.

Skills can be developed during training programs and improved little by little as the participants apply a new behavior repeatedly in life. This exercise therefore focused on knowledge and attitudes, expecting that the necessary skills will be developed by the use of proper knowledge and attitudes continuously in life; and that then, the manager or the individual will become a skilful professional.

ASSESSING JOB REQUIREMENTS THROUGH THE BRAINSTORMING TECHNIQUE

The major duties identified by participants during the job analysis stage described in Chapter 5 were displayed on flipcharts. The participants were then asked to interpret their major duties in terms of the managerial knowledge and attitudes required to perform them satisfactorily. Participants were encouraged to offer as many suggestions as possible, using the brainstorming technique, which encourages people to spell out their ideas freely without restraint or criticism.

Most managers of irrigation systems are technical professionals who have not been exposed to the development of the affective domain.

The participants' contributions were all recorded on flipcharts so that all members of the groups could later discuss their colleagues' suggestions. This prepared the participants for the following session, which aimed to analyze the gaps in their existing knowledge and attitudes through a modified Nominal Group Technique. The results of the Nominal Group Technique sessions would provide a basis for the subsequent development of curricula and training materials designed to help fill these gaps.

As an example of this process, one participant, in discussing the major duty of an engineer as inter- and intra-agency coordinator, established through discussion with the facilitator and the group that, in order to perform the tasks associated with this duty, he needed to know, among other things:

- * How to write a coordinating plan;
- * How to interact with people;
- * How to negotiate;
- * How to organize and conduct meetings; and
- * How to follow up this process effectively.

He went on to identify the attitudes he should have, or show, in performing this duty as including, among others, the following:

- * Friendliness, politeness;
- * Commitment, interest;
- * Seriousness;
- * Self-motivation;

- * Respect for people's needs; and
- * Punctuality.

The participants were encouraged to participate in this exercise actively to facilitate their awareness of the skills necessary to perform their jobs as managers of irrigation systems. To reflect the value attached to their contributions, these were recorded by the facilitators in the participants' own words.

RESULTS OF THE BRAINSTORMING SESSION

Many topics were suggested by each working group during this session. They were related to managerial knowledge; and managerial attitudes were discussed by the participants during the TNA exercise. A selection from the numerous topics suggested by one group of engineers is given below.

SELECTED BRAINSTORMING TOPICS SUGGESTED BY A GROUP OF ENGINEERS

Managerial knowledge

How to:

- * Design a plan;
- * Set criteria for meetings;
- * Assess methods for maintenance works;
- * Motivate farmers and staff;
- * Develop leadership skills;
- * Interact with farmers and other people;
- * Organize and train farmers;
- * Compile, keep records -- the monitoring / follow-up process;
- * Control groups; and
- * Mediate / resolve conflicts.

Managerial attitudes

- * Initiative;
- * Commitment;

- * Responsiveness;
- * Confidence;
- * Humility;
- * Sincerity;
- * Frankness;
- * Honesty;
- * Flexibility; and
- * Decisiveness.

After the brainstorming sessions, the lists of topics prepared by the participants were regrouped under ten headings, to facilitate analysis by the facilitators . The list below shows a selection of the topics identified by one group of technical assistants, regrouped under the ten main headings for analysis.

SELECTED BRAINSTORMING TOPICS IDENTIFIED BY A GROUP OF TECHNICAL ASSISTANTS, AFTER REGROUPING

Managerial knowledge

How to interact:

- * Develop dialogue with personnel and water users;
- * Resolve conflicts; and
- * Give and receive feedback.

How to manage human resources:

- * Supervise staff and delegate authority;
- * Conduct training for farmers and personnel; and
- * Assess staff needs.

Planning, monitoring and evaluation:

- * Define objectives;
- * Make decisions; and
- * Design control and maintenance plan.

How to use criteria and set priorities:

- * Estimate cost and budget;
- * Define allocation; and
- * Set targets.

How to manage information:

- * Develop communication system;
- * Collect data (procedures, time-frame); and
- * Define information process.

Managerial Attitudes

To stimulate communication:

- * Attentiveness;
- * Open-mindedness; and
- * Gentleness.

To build up confidence:

- * Fairness;
- * Honesty; and
- * Impartiality.

To motivate others:

- * Encouragement;
- * Support; and
- * Care.

To improve oneself (self-improvement):

- * Willingness to be corrected;

- * Interest; and
- * Sensitivity.

To direct and control:

- * Consistency;
- * Firmness; and
- * Optimism.

It was observed that the number of topics suggested by the various working groups during the brainstorming sessions was related to the level of participation and to the amount of time spent in the discussion. Some groups participated very actively in a very spontaneous way, whereas others had to be encouraged all the time to spell out their ideas.

ASSESSING GAPS IN MANAGERIAL KNOWLEDGE AND ATTITUDES THROUGH A MODIFIED NOMINAL GROUP TECHNIQUE

As the first step in the process of identifying and analyzing the gaps in their managerial knowledge and attitudes, the participants in each group were invited to review the lists of items of managerial knowledge and attitudes produced during the brainstorming session. These were displayed on the walls of the classroom, in order to help participants identify the elements which represented gaps in their own managerial knowledge and attitudes. Where appropriate, brainstorming lists produced by other groups of participants in the same category were also displayed to enrich the analysis.

The standard Nominal Group Technique was modified to provide an opportunity for participants to discuss their own gaps in knowledge and attitudes with the group as a whole, relating them to their own and their colleagues' experience. Improvements in wording, changes, deletions and the addition of new gaps were allowed, based upon group interaction and decision.

The process was carried out as follows:

- * Each participant prepared individual lists of gaps in his own managerial knowledge and attitudes, using a form designed for this purpose.
- * The first participant read aloud the first gap on his list of gaps in managerial knowledge. This was recorded on a flip chart by the facilitator.
- * Other participants who had also identified the same gap were asked to delete it from their lists.

- * The second participant was then asked to read out the first undeleted gap on his list, and the process was repeated until all the gaps listed, whether by one participant or several, had been written on the flip chart by the facilitator in one consolidated list of gaps in managerial knowledge.
- * Each item on the consolidated list was then presented to the group by the participant on whose personal list it had first been identified, describing the significance of this element in relation to his own work experience. Changes and rewording of the items, amalgamation of existing items and the addition of new ones, were allowed at this stage to improve the list in accordance with the suggestions of the group.
- * Each participant, acting individually, then established his own priorities among the various gaps recorded in the revised list by selecting and ranking in order, from one to ten, the ten gaps in managerial knowledge which he considered to be in most urgent need of attention in terms of improving his own job performance.
- * The above process was repeated with the lists of managerial attitudes, until each participant had produced individual ranked lists of the most important gaps in both knowledge and attitudes in relation to his own job.

The individual lists were then examined and each of the topics listed was awarded a score in accordance with its ranking. Each topic given first priority was awarded a score of 10, each given second priority a score of 9, and so on down to the tenth priority topic which was awarded a score of one. The individual scores were then combined to produce a group score for each of the selected topics. This process was applied to each group within each staff category, with the result that, for example, four lists of group priorities in knowledge and four of priorities in attitudes were produced by the irrigation overseers, one for each group of overseers who participated in the TNA.

At the end of the session, the consolidated lists of ten group priorities in knowledge and the similar lists of priorities in attitudes were recorded on flip charts and presented to the participants, who were invited to make comments on the results and give a feedback on the process.

After the end of the session, the priority topics in managerial knowledge and managerial attitudes identified by each group were regrouped under the ten subheadings used to group the topics identified in the brainstorming session, as described above.

The topics which received the ten highest scores in each group were considered as group priorities which could be used as a basis for designing the first training programs. In those cases where more than one group of staff in a particular category (for example, the three groups of engineers or the four groups of overseers) had participated in the TNA, the ten top priority topics from each group were consolidated into a list of priorities for that category, and assigned a consolidated category score representing the sum of the group scores.

Although in some cases the different groups within each category had included similar topics in their lists of priorities, in other cases, a particular topic had been identified by only one group. For example, Table 2 shows that only one of the three groups of engineers included "how to motivate people" in their top ten priorities.

However, they gave the topic a high score, and it therefore ranked seventh in the consolidated list of priorities for engineers as a whole.

It was considered desirable to include all the top ten priority choices from each group in the consolidated list of priorities for the appropriate staff category, and in some cases the consolidated lists may therefore include more than ten topics, some of which were chosen by only one group, some by two, and some by all three. This is shown in Table 2 (p.65).

It was decided that the first ten topics on each of the consolidated lists for each staff category -- that is, those which received the highest scores when the scores from all groups in that category were combined -- would be taken into account in designing the first training programs for the staff category concerned. Analyses of the first ten priorities identified by each category of staff, in respect of managerial knowledge and attitudes, respectively, are presented below.

In considering the needs of a longer-term training program for DID, emphasis would be placed, first, on the remaining topics on these consolidated lists of priorities for specific categories of staff, and second, on topics which staff in several different categories -- for example, engineers, technicians and overseers -- had identified during the Nominal Group Technique sessions, irrespective of the level of priority assigned to them. Analyses of these longer-term training topics are also presented below.

All the remaining topics, even those identified by only one group and given low priority, could be included in long-term training programs in future, if appropriate. In summary, all the gaps identified during the Nominal Group Technique sessions will be considered in the design of training programs as part of the human resources development program for DID at some time in the future.

Gaps in Managerial Knowledge

To illustrate the results of the process of identifying priorities, a list of the priority topics in managerial knowledge identified by the three groups of engineers is presented in Table 2.

This shows the selected topics in managerial knowledge arranged in order of priority as determined by the total scores assigned as described above. Table 2 also shows the scores assigned to each topic by each group of engineers, and clearly illustrates the fact that, while some topics were included in the top ten priorities of all three groups of engineers, others were chosen by only two groups, and still others by only one.

The first five priority topics in Table 2 also appear in Figure 4, which compares the first five priorities in managerial knowledge chosen by staff in all five categories.

Table 2. *Priorities in managerial knowledge: Engineers.*

MANAGERIAL KNOWLEDGE	GROUP /NUMBER OF PARTICIPANTS			
	1ST 25	2ND 21	3RD 19	TOTAL SCORE
1. Leadership	87	77	82	246
2. Decision making	101	39	102	242
3. Career planning (human resources development, personnel management, staff appraisal)	99	43	92	234
4. Communication system. How to interact with farming communities	84	52	50	186
5. Team building	89	--	57	146
6. Planning, procedures and manuals	103	--	--	103
7. How to motivate people	--	99	--	99
8. Farmers' training in water management	86	--	--	86
9. Communication skills, (system, intra- and inter-department)	--	--	76	76
10. Conflict resolution	71	--	--	71
* How to use criteria	71	--	--	71
* Managing poor performance of staff	71	--	--	71
* How to follow up	71	--	--	71
* Interaction with agencies	71	--	--	71
11. Technical knowledge (competence)	--	63	--	63
12. Promote positivism of character and attitude	62	--	--	62
13. Budgetary allocation	55	--	--	55
14. Human relationship	--	53	--	53
15. Consultation technique	--	--	51	51
16. Contract administration	--	--	48	48
17. How to negotiate	--	--	45	45
18. How to delegate	--	45	--	45
19. How to convince	--	38	--	38
20. Finance and manpower management	--	38	--	38
21. How to create good work environment	--	37	--	37

Figure 4. Priorities in managerial knowledge: All staff categories.

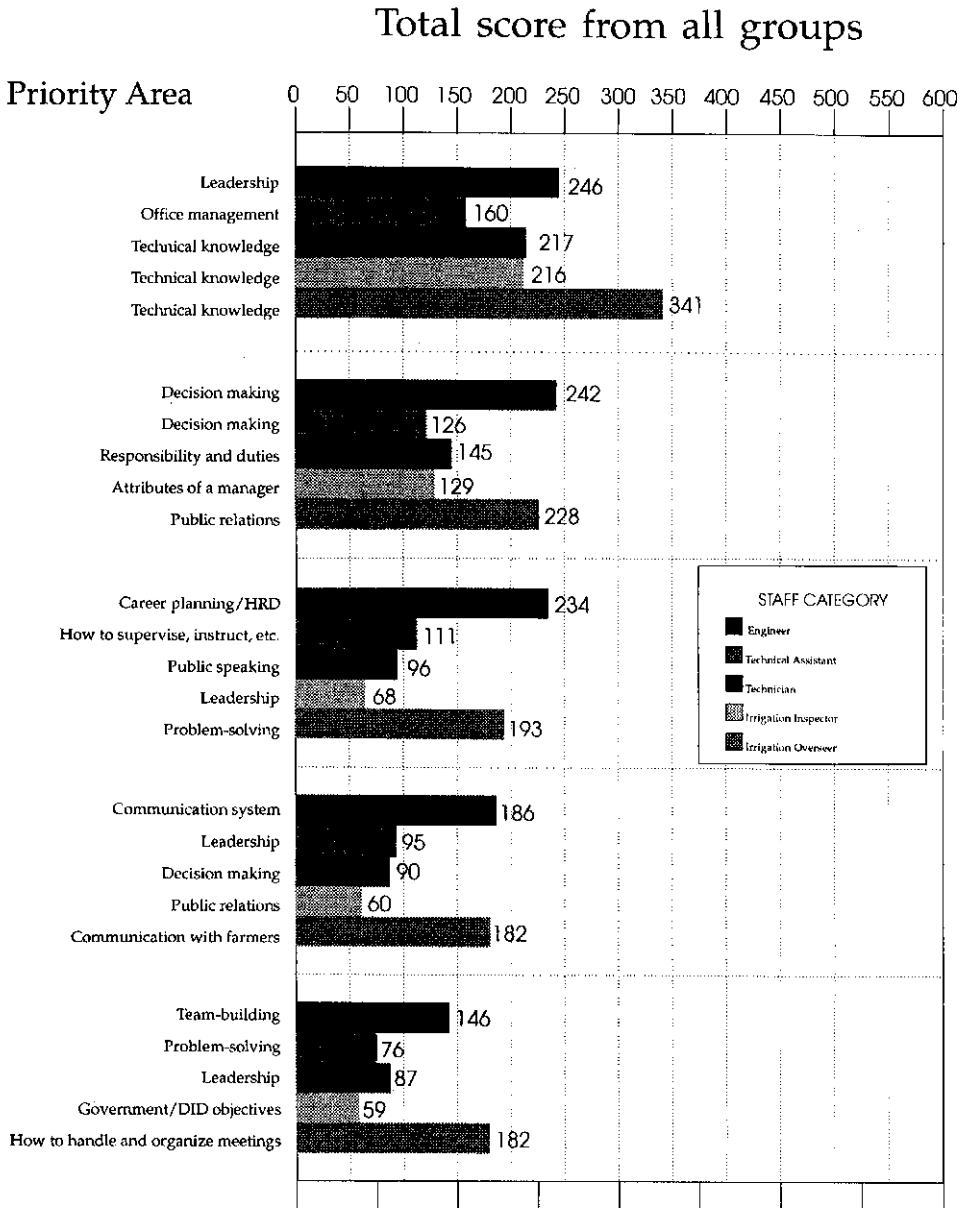


Figure 4 shows that, under the heading, "How to manage human resources," leadership was included among the first five priorities of the engineers, technical assistants, irrigation inspectors and technicians. Leadership was thus perceived by most of the groups as a necessary trait for effective management. Only the irrigation overseers did not include leadership in their lists of priorities. The engineers also gave fifth priority to another aspect of managing human resources, namely, team building.

Aspects of staff management, including supervising, monitoring and instructing staff, delegation, and managing poor performance of staff were included in the priority lists of most groups. Engineers and technicians also included aspects of training, for both staff and farmers, in their lists of priorities. The technical assistants and irrigation inspectors included understanding human behavior and psychology, respectively, among their top ten priorities, while both the technical assistants and the irrigation overseers were concerned with how to organize and conduct meetings. The engineers included how to motivate people, conflict resolution and interaction with agencies among their priorities, while the technical assistants mentioned interaction with farming communities, and the irrigation inspectors referred to cooperation between units within the department.

Leadership was perceived as a necessary trait for effective management.

In relation to "Planning, monitoring and evaluation," decision making was ranked second in importance by both the engineers and the technical assistants, fourth by the technicians and ninth by the irrigation overseers. Clearly, several groups of staff felt weak in decision making and needed to know how to make appropriate decisions and participate in the decision-making process within DID. Problem-solving was also identified as a priority area by the technical assistants and irrigation overseers, while the technical assistants and the irrigation inspectors included operations and maintenance among their priorities. The technical assistants gave first priority to how to organize office management in a systematic way. The engineers included how to follow up among their priorities, while both the technicians and the irrigation inspectors felt they needed an understanding of government and departmental objectives and policies.

Only one group identified a priority topic under the heading "How to use criteria and set priorities." This was the engineers' group who gave tenth priority to how to use criteria.

In the area of "How to manage information," public speaking was given second priority by the irrigation overseers, third priority by the technicians and ninth by the irrigation inspectors, while the engineers gave fourth priority to communication systems, including interaction with farming communities, and ninth priority to communication skills, including intra- and inter-departmental communication. The irrigation overseers gave fourth priority to communication with farmers. The technicians identified as a priority how to obtain information and feedback/data processing, while the irrigation inspectors included public relations among their priorities.

A number of topics included in the priority listings did not fall clearly into any of the five main groups of topics. The technicians, for example, identified as priorities the need to understand responsibility (duties); how to work fast (quickly and effectively); and how to act quickly and precisely. The priorities identified by the irrigation overseers included: broad knowledge in their field of duties -- interpretation of roles and duties; technique of law enforcement; how to understand instructions / objectives; how to be responsible; and understanding of department functions.

Technical knowledge was given first priority by the technicians, irrigation inspectors and irrigation overseers and was also included, with lower priority, in the lists produced by the engineers and technical assistants. Although technical knowledge was not a direct concern of the exercise, it is clearly considered as an important asset to enable irrigation staff to perform their tasks properly.

The irrigation overseers expressed great concern about conflict resolution and how to cooperate and influence cooperation. Another topic which attracted a great deal of attention was that of staff management, particularly in relation to career development and performance evaluation. Contract administration was another area of concern, mainly for technicians, irrigation inspectors and irrigation overseers.

An examination of the gaps in managerial knowledge which were identified during the Nominal Group Technique sessions by several categories of staff, irrespective of the levels of priority finally assigned to them, reveals a good measure of agreement between the various categories of staff as to which aspects of managerial knowledge were of interest.

Topics falling under the heading "How to manage human resources" received the most amount of attention from all categories of staff. They included: leadership; team building; staff management; basic psychology; conducting meetings; training of farmers; culture and customs of farmers; and attributes of a manager. Topics under the heading, "How to interact" also aroused widespread interest. These included: negotiation; interaction with farmers; conflict resolution; how to motivate; how to convince; how to coordinate interaction with agencies; and interaction with politicians.

Under the heading, "Planning, monitoring, and evaluation," the following topics were identified by several categories of staff: the problem-solving cycle; decision making; contract administration; how to coordinate; evaluation methods, systems and personnel; time management; control maintenance plan; and planning, procedures and manuals. The heading, "How to use criteria and set priorities," included the following topics identified by three or four categories of staff: budget allocation; to set priorities; to use criteria; and risk management. The final heading, "How to manage information," attracted less attention than the others, but included the following topics identified by several categories of staff: the communication system/mass media; interaction with farmers; public speaking; how to report (oral, written); and the information process.

Gaps in Managerial Attitudes

Table 3 (p.70) presents a list of the priority topics in managerial attitudes identified by the three groups of engineers, which complements the list of topics in managerial knowledge shown in Table 2. Table 3 shows the group scores assigned to each topic, and again illustrates the fact that, while some topics were included in the top ten priorities of all three groups of engineers, others were chosen by only two groups, and still others by only one.

As in the case of managerial knowledge, participants were asked to rank the topics they had identified on a priority scale from one to ten. The first five priorities identified by each staff category are shown in Figure 5 (p.71).

Aspects of the "To direct and control" area accounted for a substantial proportion of the priority topics identified. Responsibility was accorded first priority by the technicians, irrigation inspectors and irrigation overseers, and third priority by the technical assistants; only the engineers did not mention this topic. Self-confidence was ranked first by the technical assistants, second by the engineers, fourth by the irrigation overseers and seventh by the technicians. Only the irrigation inspectors did not refer to this topic. Firmness was included in the priority lists of the engineers, technical assistants and irrigation inspectors, while the engineers and technical assistants both included vision among their priorities. The technicians and irrigation overseers both considered punctuality a priority topic, and the latter also included concern in their list of priorities.

Among the topics listed under the heading "To improve oneself (self-improvement)", self-discipline was identified as a priority by the engineers, technical assistants, technicians and irrigation inspectors. The engineers and inspectors also included dedication in their lists of priorities, while commitment and creativity were selected as priorities by the engineers and technicians respectively.

The engineers gave first priority to the topic of motivation, which was also given second priority by the technical assistants. Also within the area of "To motivate others" the subject of interest was given priority by all groups except the engineers, while trustworthiness was selected by three groups and respectfulness, supportiveness and cooperativeness, were identified by one group.

Under the heading of "To build up confidence," the topic of honesty was recognized as a priority by all groups except the engineers. Responsiveness, impartiality and diplomacy were identified as priorities by one group.

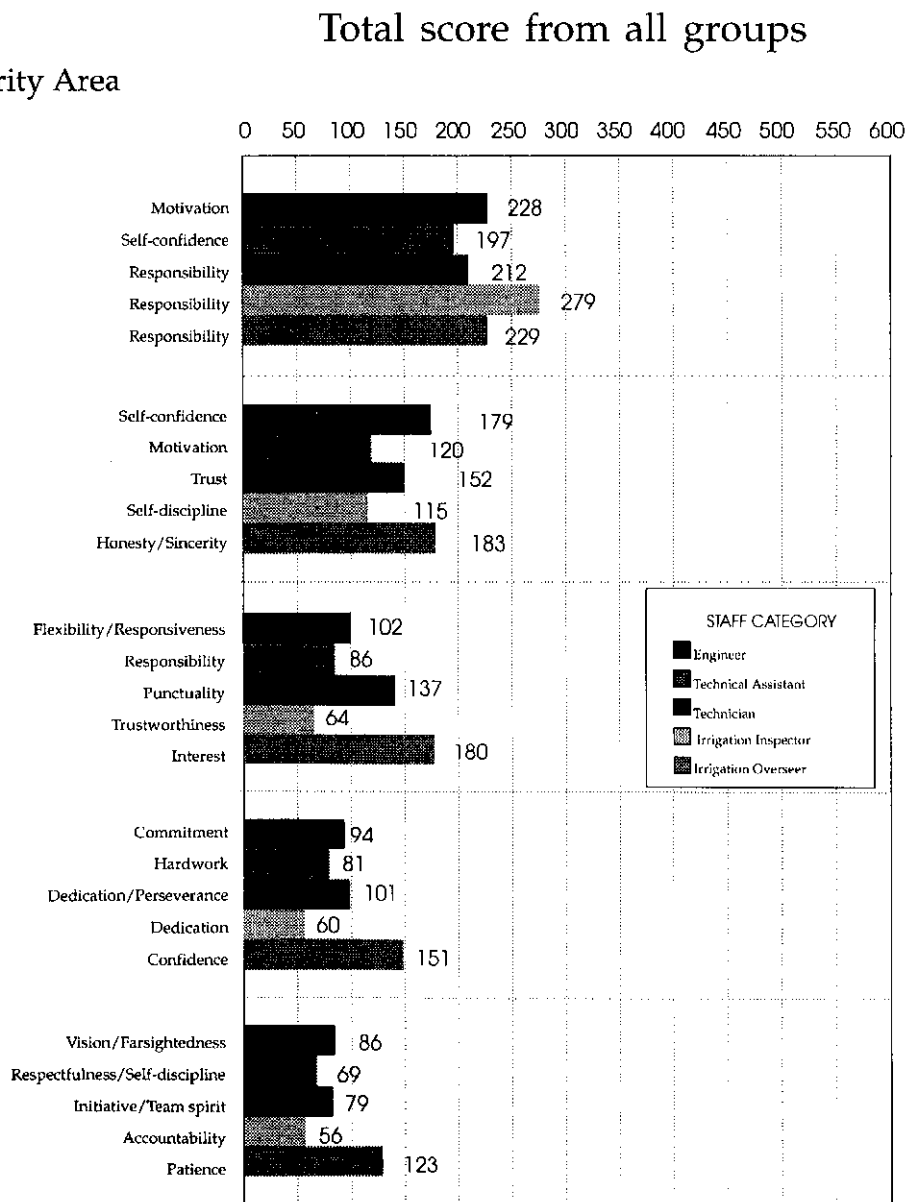
Only three topics were identified as priorities under the heading "To stimulate communication." One of these, patience, was included in the priority lists of both the technical assistants and the irrigation overseers. The engineers gave third priority to flexibility, while the irrigation inspectors identified the importance of listening to others as a priority topic.

Other topics identified by the groups and not included in the lists of common topics provided above included: consciousness; tact; hardwork; initiative; team-spirit; lack of self-interest; accountability; desire to know/learn; and upholding religious values.

Table 3. *Priorities in managerial attitudes: Engineers.*

ATTITUDES	GROUP / NUMBER OF PARTICIPANTS			
	1ST 25	2ND 21	3RD 19	TOTAL SCORE
1. Motivation	95	29	104	228
2. Self-confidence	39	43	97	179
3. Flexibility/Openmindedness	54	43	97	179
Responsiveness to staff and needs of farmers	53	--	49	102
4. Commitment	--	52	42	94
5. Vision/Farsightedness	43	--	43	86
6. Personal discipline	41	41	--	82
7. Dedication	--	73	--	73
8. Consciousness	--	72	--	72
9. Tactfulness	--	38	31	69
10. Firmness	--	--	55	55
11. Systematic (and positive) outlook	--	54	--	54
12. Self-evaluation	49	--	--	48
13. Sincerity	--	48	--	48
Constructiveness	--	--	48	--
Ability to take risks	--	--	48	48
14. Interest	--	--	43	43
15. Impartiality	42	--	--	42
16. Flexibility/Pragmatism	--	41	--	41
17. Courage	--	--	38	38
Willingness to be corrected (teachability)	38	--	--	38
18. Humanism	--	--	34	34
19. Coping with challenges	32	--	--	32
20. Being firm and unpopular if necessary	--	--	31	31
21. Sensitivity	--	28	--	28

Figure 5. Priorities in managerial attitudes: All staff categories.



The engineers and technical assistants seemed to be consistently perceiving the same gaps in attitudes, with motivation and self-confidence as first and second priorities, respectively. The DID top managers should observe this and find out the reasons for it.

The technicians, irrigation inspectors and irrigation overseers were consistent in their choice of first priority, responsibility. The reason may be that a sense of responsibility is perceived as important in carrying out a job effectively. This also seemed to be felt by the technical assistants, who assigned third priority to this topic.

The level of agreement between the various categories of staff as to which managerial attitudes were of interest, irrespective of the levels of priority finally assigned to them, was somewhat less than that accorded to aspects of managerial knowledge, but still quite substantial.

Among the five main areas into which the topics identified during the nominal group sessions were divided, that of "To direct and control" reflected a high degree of consensus, with the following topics being identified by staff in several categories: firmness—in dealing with staff and farmers; responsibility; preciseness; vision/farsightedness; ability to take risks; self-confidence; concern; punctuality; bravery or courage; and persuasiveness.

There was also substantial agreement on the topics of interest under the heading "To improve oneself (self-improvement)," where the following topics were identified by several categories of staff: adaptability; sensitivity; creativity or innovativeness; willingness to be corrected/teachability; dedication; commitment; self-discipline; coping with challenges; and seriousness.

The area, "To motivate others" included the following topics identified by several categories of staff: to motivate farmer community and staff; interest/caring/enthusiasm; gentleness, kindness, friendliness; supportiveness; cooperativeness; trustworthiness; respect; and appreciativeness. Under the heading "To build up confidence," the topics of honesty, impartiality, fairness, diplomacy and tolerance were identified by staff in several categories; while under the fifth heading, "To stimulate communication," several categories identified patience, flexibility, openmindedness, being a good listener, humility/simplicity and understanding as gaps in their managerial attitudes.

ANALYSIS OF THE NOMINAL GROUP TECHNIQUE RESULTS

The use of the modified Nominal Group Technique to assess the gaps in managerial knowledge and attitudes of DID staff at this stage of the TNA exercise was considered to be very useful and very effective.

The first phase of the technique, which was performed by the participants individually, helped them to carry out a self-analysis and to gain awareness of, and accept, their own limitations in the performance of managerial duties and tasks. They had already become aware of the requirements of their jobs, in terms of managerial knowledge and attitudes, as a result of their participation in the brainstorming session.

During the second phase of the application of the modified Nominal Group Technique, in the listing of gaps in managerial knowledge and attitudes, it was observed

that most of the participants felt at ease and were able to share their lists with the other members of the group without embarrassment. This was helped by the facilitators' explanation of human limitations and the importance of teamwork to overcome them.

The third phase was considered to be the climax of this session. Each participant was invited to explain the reasons for his or her specific contributions to the group list of gaps in managerial knowledge and attitudes. Participants were asked why they considered the topics which they had contributed to the lists as gaps in their ability to manage the irrigation environment. Most participants related the gaps in their knowledge and attitudes to failures they had experienced at work. Their explanations were discussed by the other participants, some of whom had experienced similar problems, while others had found ways to overcome them which they were now able to share with the group.

Most participants related the gaps in their knowledge and attitudes to failures they had experienced at work

It is important to note that these lists were produced *by the participants themselves* on the basis of their own analysis of the managerial knowledge and attitudes required to perform their jobs satisfactorily. The facilitators took pains to clarify the expressions used by participants and frequently recorded their explanations in parentheses to facilitate the subsequent compilation and grouping of the contributions. On occasion, the imprecise terminology used by some participants made it difficult to consolidate items. Nevertheless, recording the participants' contributions as far as possible in their own words contributed greatly to encouraging them to express their ideas. It served to emphasize the importance of their participation in ensuring the validity of the exercise, which was designed to meet the real and practical needs of DID staff to improve their own performance so as to improve the effectiveness of DID as a whole.

The participants were conscious of the importance of this session as a means of providing a basis for designing and implementing effective training programs to help them to fill the gaps in their managerial knowledge and attitudes so as to manage irrigation systems better.

ORGANIZATIONAL CONSTRAINTS

In general, in developing countries, there is a common, and mistaken belief that training can solve all kinds of problems within the organization. In order to help participants in the TNA exercise to recognize and avoid this mistake, they were provided with an opportunity to identify the organizational constraints which affected the performance of DID staff and to recommend ways of overcoming them. These constraints are external to, and independent of, the capabilities of the staff, and to overcome them demands other kinds of intervention rather than training.

The participants were invited individually or in pairs to list constraints related to the managerial conditions and processes identified below, and suggest ways of overcoming

them. They were then invited at random to state some of the items on their own lists to be recorded on flip charts. Some of these constraints were then discussed by participants within a limited amount of time. The individual forms were collected and the responses consolidated and presented to DID officials both through the Malacca workshop and the final report on the TNA.

The main areas in which organizational constraints may arise were discussed under the following headings:

MANAGERIAL CONDITIONS

- * Human resources;
- * Financial resources;
- * Material resources;
- * Information and communication;
- * Rules and procedures; and
- * Knowledge and skills.

MANAGERIAL PROCESSES

- * Guidance, monitoring and evaluation;
- * Interference by politicians; and
- * Interaction with farmers.

The heading "Managerial conditions," includes constraints related to such topics as: human resources management, including motivation and incentives; management of information systems; other management control systems; knowledge; and organizational rules and structure.

The heading "Managerial processes" includes any kind of constraint which affects activities involving decision making.

There is a common, and mistaken belief that training can solve all kinds of problems within the organization.

Three-quarters of all the organizational constraints identified were in the area of "Managerial conditions," and only one quarter in the area of "Managerial processes."

Under "Managerial conditions", the identified constraints were grouped as follows: human resources (36%), material resources (18%), financial resources (15%), knowledge and skills (14%), rules and procedures (11%), and information and communication (6%). Specific constraints identified by many participants included lack of trained staff, lack of equipment, limited allocations, bureaucratic structure of government, and breakdown in communication.

Under "Managerial processes," the constraints were grouped as follows: guidance, monitoring and evaluation (48%), interference by politicians (32%), and interaction with farmers (19%).

EVALUATION OF THE TNA EXERCISE

At the end of each one-and-a-half-day TNA session, the participants were invited to evaluate the exercise in terms of: the level of achievement of the objectives defined and shared with them at the beginning of the event; satisfaction related to group atmosphere; interest and motivation; participation; productivity; and physical arrangement and comfort. They also evaluated the strong and weak points of the workshop and provided suggestions for its improvement. The evaluation was based on a scale from 1 (low, objectives not achieved) to 5 (high, objective achieved very well).

In general, the participants evaluated the session as a positive experience and indicated that the objectives were achieved, awarding ratings between 3.61 and 4.08. On the strong points of the meeting, the participants collectively agreed that it provided awareness of their jobs, duties and tasks and of the distinction between technical and managerial aspects, and knowledge, attitudes and skills. There was good interaction and participation, sharing of ideas, discussion, frankness, warmth and team effort.

On the negative side, the shortcomings of the session included lack of time, the language barrier, too much paperwork and solutions which were not immediate. Participants suggested that more time be allowed, that prior explanation and information should be extended and that similar sessions should be held for other staff on a regular basis to highlight the technical aspect as well as the managerial aspects. A large number of participants felt that the physical arrangements should be more comfortable.

CONCLUSION

This chapter presented the results of the efforts made by DID and IIMI to assess the training needs of the DID staff and the organizational constraints affecting their performance. The aim was to gather the information required to design and implement relevant irrigation management training programs and initiate other actions to overcome organizational constraints.

The session dealing with the identification of managerial knowledge, attitudes and skills provided the tangible and intangible results which DID and IIMI were hoping for.

This was due largely to the fact that this session was preceded by others which facilitated awareness of the management aspects of irrigation, developed the participants' understanding of the difference between the technical and managerial skills needed to perform irrigation tasks and increased their awareness of the need to develop appropriate attitudes to be successful in their jobs.

The session was highly evaluated by the participants. Some of them commented on its usefulness in helping them to identify their strengths and weaknesses and in developing willingness to improve their skills.

Although this session provided DID and IIMI with the desired lists of gaps and organizational constraints to facilitate future actions, the most important element of the exercise was the process of group analysis of irrigation activities and of DID as an organization. Interaction between participants was facilitated by the existing common feelings towards DID which were shared openly, sincerely and with commitment to improving DID in order to help it accomplish its goals.

As a result of the information on gaps in managerial knowledge and attitudes received during this session, DID initiated a process of designing and implementing a training program based on the identified needs and reviewing the organizational components which give rise to some of the constraints experienced by its staff. These actions are described later in Part III.

The aim of the TNA was to gather information to design and implement relevant irrigation management training programs and overcome organizational constraints.

PART III

DEVELOPING MANAGEMENT TRAINING PROGRAMS

PART III OF this account of irrigation training activities in Malaysia contains six chapters dealing with the development of management training programs for the Department of Irrigation and Drainage. It uses the results of the TNA exercise as a guide to the gaps in managerial knowledge, attitudes and skills which are needed to be filled if DID staff are to improve both their own performance and that of the organization as a whole.

An important element in the process of developing management training programs for DID was the involvement of irrigation trainers in the TNA process itself. This not only enabled them to identify the gaps in their own managerial knowledge and skills to provide a basis for the development of training programs for trainers, but also enabled them to experience the TNA process at first hand and thus to appreciate its importance as a necessary precursor to the planning of training activities for staff in all categories.

This was particularly important because some of the trainers would go on to be trained, under the collaborative program of training activities developed by DID and IIMI, to design and implement management training programs for technical staff at all levels in the organization.

The involvement of trainers in the TNA is described in Chapter 7 below. Top managers of DID and irrigation researchers were also involved in the TNA in a similar way, but these activities are described in Part IV, Chapter 13 and Part V, Chapter 16, respectively.

Chapter 8 of Part III describes the preparation of a training plan for DID, based on the results of the TNA and involving the top management of DID as well as the IIMI training team. This provided the framework for the next stage, described in Chapter 9, which was that of curriculum development. This involved the preparation of draft curricula for two pilot training activities, for engineers and irrigation overseers, to be carried out by DID trainers with support from the IIMI training team.

Chapter 10 describes the production, by the IIMI training team, of training materials specifically designed to support the two draft curricula. An important aspect of this process was that it provided a demonstration of how the published results of IIMI research could be translated into effective training materials for use with irrigation personnel at all levels.

Chapter 11 describes the training of trainers from DID, UPM, MADA and KADA in preparation for the implementation of the two pilot training programs.

The final chapter in Part III, Chapter 12, describes how these pilot programs were implemented by the Malaysian trainers and monitored by the IIMI training team to ensure that the training of trainers was carried out effectively, and that the Malaysian trainers would be able to continue to design and implement further training activities for DID on their own.

CHAPTER 7

Involving Trainers in the Training Cycle

INTRODUCTION

IIMI'S MANAGEMENT TRAINING and Institutional Development Strategy states that IIMI should give assistance for improving national capacity in developing countries through partnership with existing national training centers and universities. In Malaysia, DID maintains three training centers to carry out the training of its irrigation personnel and farmers: the Staff Training Center in Kuala Lumpur; the Federal Mechanical Workshop Center, Ipoh; and the National Water Management Training Center (NWMTC), in Kota Bharu.

Various types of technical training programs have been developed by these centers. However, before the present exercise began, there have been no activities related to management training. Due to the intensification of the irrigation infrastructure and other trends, there was an increasing demand for highly qualified irrigation personnel to implement modern water management techniques. It was realized that irrigation management training should be a part of the activities of the DID training centers and that DID trainers should have the opportunity of upgrading or developing specific skills to be able to implement management training programs effectively.

The success or failure of the training program depends upon the trainers.

The involvement of the trainers in all phases of the training cycle was considered a very important element of this program, because they are the main actors in this activity. They have to be planners, implementers, motivators, and facilitators of training activities. To be all these, they need to be sensitized enough to believe in the important role they have to play and develop special skills to manage training.

The success or failure of the training program depends upon the trainers. Training activities demand from the trainers a great deal of commitment, dedication, hard work, belief, persistence and other positive attitudes to help them deal with people and training activities. This is the only way the trainers can make the learning process relevant to the participants and effective for the organization.

Trainers were invited to participate in all stages of the joint DID and IIMI management training program. Two trainers from NWMTC in Kota Bharu were assigned to be part

of the training team. They participated in planning, implementing and evaluating all activities of the program.

As part of the TNA exercise, trainers from DID and other institutions were invited to participate in a one-and-a-half-day workshop to discuss the requirements for training jobs in Malaysia and the existing constraints on the performance of their activities. It was expected that, by the end of this exercise, the trainers would be able to provide the information necessary to design an effective training program to enable Malaysian trainers to manage irrigation management training for their organization and develop commitment towards this kind of program. The organization, implementation and results of this TNA session for trainers are described below.

OBJECTIVES OF THE SESSION

The TNA session for trainers aimed to bring together, on the one hand, irrigation engineering personnel from DID, MADA and KADA who were involved in technical training as part of their jobs, and, on the other, staff from MARDI, the Department of Agriculture, the National Institute for Public Administration and the Department of Engineering at UPM to discuss:

- * The need for developing irrigation management training in their institutions;
- * Their participation, as trainers, in management training and development;
- * The need to define job descriptions for trainers;
- * The major duties and tasks performed by trainers; and
- * The existence of constraints within DID, MADA and KADA which prevent the management training program from being developed as part of the organization.

METHODOLOGY

In summary, the methodology for this session comprised:

- * A "getting to know each other" exercise;
- * Presentation and discussion of the Analytical Framework for Irrigation Management;

Discussion of the job descriptions of trainers;

- * Discussion and listing of major duties and tasks performed by "manager-trainers;"
- * Identification, discussion, and listing of managerial knowledge, attitudes and skills needed to perform training jobs, using a brainstorming technique to facilitate participation;
- * Definition of priorities among managerial knowledge and attitudes;
- * Identification of organizational constraints; and
- * Evaluation of the TNA session by participants.

PRESENTATION OF THE ANALYTICAL FRAMEWORK FOR IRRIGATION MANAGEMENT

The presentation of the Analytical Framework was followed by questions from the participants, who wanted to know how to apply the management concepts in their jobs. An assessment of the participants' duties was carried out in order to help them understand that in all tasks they perform in the field, they find both technical and managerial components, which should be treated with the same level of attention.

The discussion of the Analytical Framework was felt by participants to have been useful. One of them felt that it "gave fair knowledge to improve managerial quality," while another stated that "to differentiate between irrigation management and technical activities was a strong point of this session."

REVIEW OF JOB DESCRIPTIONS FOR TRAINERS

Since neither DID nor the other institutions whose trainers participated in this exercise had official positions for trainers as such, there were no formal job descriptions for this activity. The DID trainers were selected from among staff in different categories who were assigned to work in the three training centers for specific periods of time. One aim of this segment of the TNA for trainers was to sensitize the participants and top management to the need to create positions for trainers within the institution and to define their functions and responsibilities so as to encourage staff to become trainers and improve their job performance in this role.

The following training activities were presented by the Training Specialist and discussed with the participants:

- * Assessing training needs to design effective training programs;
- * Designing training curricula to reflect TNA results;

- * Defining training objectives and content;
- * Selecting appropriate training methods and techniques to implement diverse training activities;
- * Designing and producing training materials to support the training curricula and facilitate learning;
- * Implementing the training activities efficiently;
- * Designing a follow-up program to ensure the application of new skills in the field; and
- * Evaluating the training activities systematically to measure the results and review future plans for improving training activities at DID.

The participants were invited to discuss these issues to facilitate their awareness of the needs for such training skills at DID and to develop their enthusiasm for the training profession.

JOB ANALYSIS

The job analysis for trainers was done using the *Format for self-analysis of irrigation jobs*. The participants were invited to complete this either individually or in pairs. This instrument aimed to assess the participants' views of the technical and managerial aspects of training jobs, including how their performance as trainers could be assessed, opportunities for improving their competence as trainers, and so on.

The following performance indicators were identified which could be applied to assess the performance of trainers:

- * Meetings and discussions held on schedule;
- * Level and style of presentations;
- * Dropout rate among trainees;
- * Number of training sessions held;
- * Percentage of planned extension programs actually carried out; and
- * Level of complaints.

In summary, the trainers showed clear understanding of the technical and managerial aspects of their jobs in their responses to the questionnaire.

IDENTIFICATION OF MANAGERIAL KNOWLEDGE, ATTITUDES AND SKILLS

This segment aimed to encourage the participants to analyze the major training duties and translate them into the managerial knowledge, attitudes (and skills) needed to perform them.

The participants were invited to reflect on what should be the content of the job description of a trainer. They were asked to select two of the major duties of such a job and analyze them into their component tasks. The major duties identified in the job analysis session were written on flip charts and displayed on the wall. Some of the major duties identified in the first phase of this exercise were:

- * Conducting technical training for DID staff;
- * Setting plan of work;
- * Selecting methods and techniques for training ; and
- * Conducting training for farmers.

A briefing on the concepts of knowledge, attitudes and skills was presented and participants were encouraged to choose some of their duties and analyze the managerial knowledge and attitudes involved in performing them. The brainstorming technique was used and long lists of managerial knowledge and attitudes were produced.

After the brainstorming session, the lists of topics prepared by the participants were regrouped, to facilitate analysis by the facilitators, under ten main headings, as shown in the following sample of the responses obtained.

MANAGERIAL KNOWLEDGE OF TRAINERS

How to interact

- * How to motivate -- to sustain interest of trainees and trainers.
- * How to develop listening skills.

How to manage human resources

- * How to define competency level and performance standards.
- * Team building.

Planning, monitoring and evaluating

- * How to set goals and objectives of training programs.
- * How to design monitoring and evaluation strategies for training.

How to use criteria and set priorities

- * Budgeting and funding (for courses).
- * Implementation of training programs based upon financial aspects.

How to manage information

- * How to communicate effectively, including mass, interpersonal and nonverbal communication.
- * Public speaking (personal posture, general behavior, etc.).

MANAGERIAL ATTITUDES OF TRAINERS

How to stimulate communication

- * Patience.
- * Interest.

How to build up confidence:

- * Frankness.
- * Fairness.

How to motivate others:

- * Empathy.
- * Concern and care.

How to improve oneself (or self-improvement)

- * Seriousness.

- * Creativity.

How to direct and control

- * Self-confidence.
- * Responsibility.

SETTING PRIORITIES

The participants were invited to assign priorities to the items on their brainstorming lists, emphasizing the items which should be developed as course content during the first training program. Ranking sheets were used to record the participants' individual preferences. The individual lists were then scored and combined to produce final overall rankings for both managerial knowledge and managerial attitudes of trainers.

In terms of managerial knowledge, first priority was given to how to set the objectives and goals of a training program, including identifying target groups and setting priorities. Second priority was assigned to how to communicate effectively (mass communication, interpersonal communication, personal posture or behavior) and public speaking. Teaching techniques were given third priority, closely followed by how to define and design course content and identify suitable resource personnel, as fourth priority. How to define competence needs and interest (i.e., how to assess the skills needed, and the level of interest in becoming trainers on the part of technical staff), was given fifth priority; and how to prepare course scheduling (optimum time), was assigned sixth place.

Less importance, in terms of the overall scores, was attached to the remaining items on the priority list, namely, how to implement the course (methodology), given seventh priority; how to design monitoring and evaluation mechanisms (formative, summative) and define course content, ranking eighth; how to motivate in order to sustain interest of participants and trainers, ranking ninth; and two items, competence level and performance standard, and budgeting and funding: financial aspects and logistics for program implementation, jointly in tenth place.

The various managerial attitudes were placed in order of priority as follows: dedication; self-confidence; sensitivity to organizational and country needs; responsibility; motivation; creativity and innovativeness; concern, being caring and loving; flexibility, openmindedness, vision; patience; realism.

IDENTIFICATION OF ORGANIZATIONAL CONSTRAINTS

The participants were invited to list the organizational constraints which were contributing to reducing their performance as trainers and to recommend ways of overcoming them. A long list of constraints and recommendations was produced. Some examples are presented below, using the participants' own words, wherever possible.

HUMAN RESOURCES

Constraint: In order to be a trainer, there must be a trainee. In some states, the head of department is reluctant to release officers for relevant courses due to their work commitments.

Solution: To inform heads of department of the need to upgrade the skills of their staff and expose them to new technologies, etc., and to recruit more technical staff.

FINANCIAL RESOURCES

Constraint: Limited allocations.

Solution: To try to be more flexible in budget allocations for training purposes.

MATERIAL RESOURCES

Constraint: Lack of equipment such as computers for training purposes.

Solution: If possible, to try to acquire more computer units for training purposes. Sharing a computer for an intensive computer course is a disadvantage for the participant.

INFORMATION AND COMMUNICATION

Constraint: Shortage of reference material on water management.

Solution: International organizations related to water management should be contacted to establish linkages.

RULES AND PROCEDURES

Constraint: Lack of operational guidelines.

Solution: Pragmatic operational guidelines should be made readily available.

KNOWLEDGE AND SKILLS

Constraint: Being involved in lecturing throughout the year obstructs me from attending other courses at other places to upgrade my knowledge.

Solution: A special break should be provided or slotted in the program at the correct time where the related courses for improvement are available.

GUIDANCE, MONITORING AND EVALUATION

Constraint: The expectations of top management are too high and without regard of our handicaps.

Solution: Directors should come down to a level of understanding and be more practical.

CONCLUSION

The TNA session for trainers was designed to accomplish two objectives: first, to discuss training issues and collect information necessary to design a training program for Malaysian trainers; second, to influence DID professionals functioning as trainers at the training centers, to view their jobs as an important component which contributes to their self-development and to the development of the DID staff responsible for the improvement of the organization.

The participants highly evaluated the accomplishment of the objectives of this session and expressed their appreciation of the opportunity they had to discuss training issues related to the performance of their tasks as trainers. Usually, at DID, staff were assigned to work as trainers at the training centers for a certain period of time without any training to upgrade their skills. This procedure was seen by DID as contributing to their professional development. However, it had affected the level of interest and motivation among the staff, since they lacked confidence and appropriate skills for training and were often not able to attract the interest and attention of the trainees.

Staff assigned to work as trainers lacked confidence and skills for training.

CHAPTER 8

Preparation of the Training Plan

INTRODUCTION

TO COMPLETE THE implementation of the training cycle and ensure the effectiveness of training results in DID, the next essential steps in the training process were to prepare a short-term training plan and develop a training curriculum which would reflect the findings of the training needs assessment. Members of the top management of DID were accordingly invited to participate, together with the IIMI training team, in a three-day workshop, held in Malacca in February 1990, to discuss the findings of the training needs assessment, identify training priorities for DID as a whole, and prepare an immediate training plan for DID staff. This activity enabled the implementation of the second and third phases of the action research model which were (a) the provision of feedback to the DID officials and (b) the design of the action plan necessary to implement the next activities of the training cycle.

The workshop comprised five main sessions. After an opening ceremony addressed by the Director General of DID and others, participants discussed the findings of the TNA, followed by a review of the concept of management planning, a discussion of organizational constraints and the requirements of a training plan for DID, and a closing ceremony.

OBJECTIVES AND OUTPUTS

The objective of this workshop was to prepare a training plan for DID which would:

- * Reflect the objectives of each activity of the training cycle;
- * Describe the approaches and strategies of the activities;
- * Include a tentative schedule for the implementation of the plan;
- * Define the priorities of DID itself as to which levels of staff should receive training;

- * Decide on the criteria for selecting the first groups of trainees;
- * Discuss priorities in overcoming organizational constraints; and
- * Decide on the strategy for evaluating each stage of the training cycle.

The intangible outputs of the workshop were expected to include:

- * Improved commitment of the organization to the training program;
- * Increased confidence that training activities will be implemented and continuity attained; and
- * Raised expectations of the training results.

The tangible outputs were expected to include:

- * Lists of defined objectives for each stage of the training cycle;
- * Description and schedule of the training activities to be undertaken;
- * A list of the content priority for the training curricula assigned by the organization to the training of staff in different categories;
- * Lists of criteria for the selection of participants for the training of trainers and other training activities during the implementation of the training cycle;
- * Recorded decisions with regard to budgetary support for the training activities; and
- * Recorded decisions on the strategy for evaluating each stage of the training cycle.

OPENING OF THE WORKSHOP

In opening the workshop, the Director General of DID explained the background and rationale which had led to the joint effort between DID and IIMI to assess training needs, identify constraints and formulate short-term and long-term programs to train irrigation personnel in Malaysia. He reviewed the development of irrigation in Malaysia since the formation of DID and highlighted characteristics of development and areas of concern, as well as discussing current thinking on irrigation investment policies and the need to focus on making the best use of what resources were already available. In this respect, the importance of human resources development was

recognized by DID as an essential part of its long-term strategy for improving irrigation management (DID 1990).

The Director of Programs of IIMI then reviewed world trends in irrigation, pointing out that the focus is currently on raising standards of irrigation management. While the operation and maintenance (O&M) of irrigation systems was usually guided by standard rules and procedures, it was now recognized that the quality of decision making in different situations determines the effectiveness and efficiency of O&M. Training helps to improve the quality of the human resources which are necessary to execute the tasks of irrigation management, and high caliber well-trained staff at all levels are necessary to improve the performance of irrigation systems (DID 1990).

The aims and organization of the workshop were presented, and a "warm-up exercise" carried out to introduce the participants to each other and create an atmosphere conducive to active participation and response.

FINDINGS OF THE TNA

The DID top managers and senior engineers were invited to evaluate the findings of the TNA exercise, particularly with regard to the existing shortcomings in managerial knowledge and attitudes among the DID staff. This evaluation reflected the top management view of the training needs of DID as an organization, as compared with the needs of specific groups or individuals as perceived during the TNA exercise.

Well-trained staff at all levels are necessary to improve the performance of irrigation systems.

This session began with the presentation of a video of the TNA exercise held in DID in October and November 1989. The procedures, room layout, methodology and presentation styles were highlighted. The next session reviewed the objectives of the TNA and the procedures adopted. The criteria used to select the TNA participants were explained, in order to demonstrate that engineers are involved in irrigation management tasks irrespective of their technical duties. The results of the TNA were presented and discussed, and the two DID trainers who led this session referred to the need to focus on the training needs of technicians, irrigation inspectors and irrigation overseers.

Some participants expressed doubts as to the validity of some of the statistical methods used to analyze and evaluate the results of the TNA. It was pointed out that the statistical methods employed were commonly used in the behavioral sciences to interpret large masses of data. The TNA could not be regarded as an exercise in the exact sciences, and some subjective methods had to be used, mainly to evaluate the participants' attitudes, which belong to the affective domain of learning. Among the various devices to measure results in this domain, the TNA exercise had used rating scales and observation checklists.

In presenting the results of the TNA session for trainers, it was pointed out that DID staff periodically assigned to be trainers at the training centers had never been trained to develop training skills. Because of that, they were feeling demotivated and incapable of performing training tasks properly. The results and priorities of the TNA for trainers had demonstrated their concern for improving their skills in such areas as how to set goals and objectives for training, how to improve their teaching techniques, and so on.

The plenary discussion on the overall conclusions and recommendations of the TNA was very fruitful. One participant suggested that senior engineers should be asked for their opinions on the training needs of their subordinates. This would provide a useful comparison between the needs perceived by individual staff members and those perceived by their supervisors. It was explained that one of the aims of the workshop, and of that planned to deal with curriculum development, was to assess the views of top managers on the organizational needs as far as the training content was concerned. These sessions would provide an opportunity to record the overall view of the top managers instead of individual opinions. However, the suggestion was recorded and considered relevant by the session participants.

THE CONCEPTS OF MANAGEMENT AND PLANNING

A range of issues related to management and planning were presented and discussed in this session, to facilitate the participants' understanding for the design of an effective training plan. The nature of the decision-making process, including the decision-preparation and decision-taking phases, were discussed, and the importance of leadership qualities for decision making was emphasized.

Steps to be taken by the participants in deciding on the short- and long-term training plans, such as prioritizing training schemes by category, determining the numbers to be trained and the resources available for the training program, were outlined and discussed.

In addition, it was pointed out that a clear frame of reference was very important in any TNA exercise. In problem identification, the diagnosis determines the therapy. If the framework is only technical, the conclusions will be that any shortcomings are technical; if the framework is only managerial, the conclusions will be only managerial also. It was emphasized that the TNA had provided relevant information on the managerial shortcomings of DID personnel because it had been based on a clear analytical framework. This served as a checklist which enabled the managers to look at various dimensions of DID and analyze the existing shortcomings in managerial skills needed to accomplish specific tasks to achieve the organization's goals.

The concept of irrigation management was also presented during this session and its principles, organizational factors, administration process and leadership discussed. Many examples and case studies were quoted to illustrate points raised during this session.

THE DID TRAINING PLAN AND ORGANIZATIONAL CONSTRAINTS

The aim of this session was to obtain the views of the top managers on issues related to preparing a short-term training plan, such as priorities in terms of staff categories, the training content of the curricula and the organizational constraints which had to be overcome.

The managers worked in small groups to study and evaluate the TNA results and to confirm or modify the training needs which had been identified by the various categories of technical staff during the TNA, in the light of their own perception of the needs of DID for improving the managerial skills of its staff. The managers made proposals with regard to which groups of technical staff should receive training first, and which topics should be assigned priority, in deciding on the content of this training. Their recommendations were in turn evaluated by the top management of DID, and it was decided that the first two groups of staff to be trained should be engineers and irrigation overseers. The content of the training agreed upon for each of these categories is described in Chapter 9 below. Other suggestions made by the participants were concerned with the time frame for designing a long-term training plan, including postgraduate courses, training institutions, countries with training facilities, and so on.

Regarding organizational constraints, the managers again worked in small groups to discuss the lists of constraints produced by the participants in the TNA exercise. The managers were asked to identify their own constraints and propose steps to solve them.

Common problems identified during these group discussions were grouped under the headings of managerial conditions and managerial processes, together with suggestions for solving them, as shown in the following example.

MANAGERIAL CONDITIONS

- * Lack of procedures and manuals.
- * Unclear policies and objectives.

MANAGERIAL PROCESSES

- * Lack of support and guidance.

PROPOSED SOLUTIONS

- * To make available procedures and manuals designed to meet the level of competence and academic requirements of the recipients.
- * To design guidelines appropriate to the level of personnel, to facilitate understanding of organizational policies and objectives.

- * To communicate with staff in a more informal manner to create a sense of belonging, to attain team work, and develop *esprit de corps*.

CLOSING OF THE WORKSHOP

During the closing ceremony, the Director, Programs of IIMI emphasized the importance of self-confidence as an attribute of a good irrigation manager. This implied the courage to accept that defects and failures do occur, and the courage to meet the challenge to improve. Training was essential to prepare the individual and the organization to be innovative and be able to respond efficiently to change.

The Director General of DID noted that the TNA exercise had expressed the feelings of all categories of staff involved in irrigation management, and had also identified areas where training needed to be improved. The expectations of all staff had been raised through the TNA, and in order to develop specific programs and action plans, everyone concerned should take advantage of the momentum already generated and ensure the success of the exercise (DID 1990).

EVALUATION OF THE WORKSHOP

At the end of the workshop, the participants were invited to evaluate the event in terms of: the level of achievement of its objectives; the group atmosphere, interest and motivation, participation, productivity; and physical arrangements and comfort. They also evaluated the strong and weak points of the workshop and provided suggestions for its improvement.

The objectives were considered to have been achieved well and the implementation of the workshop was rated highly. The participants' views of the strong points may be summarized as appreciation of the opportunity to participate in designing future actions to improve DID performance in terms of training, and to overcome constraints. Lack of time was again cited as one of the weak points. Participants would have liked to have had more time to discuss the issues more intensively and felt that the group discussions had been rushed. One suggestion was that DID should conduct more workshops of this kind for smaller groups of top managers to discuss organizational problems and design action plans to solve them.

CONCLUSION

The workshop to discuss the TNA results with the DID top management and obtain their views on the preparation of training plans for the organization was a vital element in the overall management training program in Malaysia. Most of the participants were top managers and senior engineers of DID, who were responsible for managing

irrigation systems in the country. The workshop provided an opportunity for them to become aware of the shortcomings in managerial knowledge, attitudes and skills among DID staff and of the organizational constraints which were preventing staff from working properly to help the organization to produce better results.

The discussions of the TNA results and the organizational constraints were intense and very open. The managers were very receptive, particularly to the constraints relating to their own attitudes and behavior. They observed that the TNA participants had frequently used the term "boss" instead of "manager" or "supervisor" when commenting on negative aspects in their ways of managing people and irrigation activities. The workshop thus provided a unique opportunity for top managers to get feedback on these matters from their staff and to discuss with their colleagues ways of improving their management style, in order to be more effective as managers, leaders and supervisors at DID.

The event produced very positive results in terms of improved commitment and increased confidence that training activities could be useful and effective in helping DID managers to improve the skills needed to manage irrigation systems in the country. However, it proved impossible, during the time available, to make decisions with regard to either the implementation of the next steps of the training cycle as part of the training plan, or the provision of financial support for future training activities. Nevertheless, the short-term proposals with regard to the development of the training program provided the essential foundation for the next stage in the training cycle, the development of curricula for training the priority groups, engineers and irrigation overseers. This process is described in the next chapter.

Training prepares the individual and the organization to be innovative and able to respond efficiently to change.

CHAPTER 9

Curriculum Development

INTRODUCTION

TWO DRAFT CURRICULAR were developed to reflect the training needs of DID staff during a one-day workshop held on 18 October 1990 at DID Headquarters in Kuala Lumpur. The workshop was attended by the Deputy Director General, who chaired the event, the Director for Training of DID, and training staff from DID headquarters, trainers from two DID training centers and the IIMI Training Specialist.

OBJECTIVES AND OUTPUTS

The objectives of the workshop were:

- * To discuss the results of the TNA and the three-day top management workshop held in Malacca, with a view to determining DID priorities in terms of the categories of staff to be trained and the content of the training;
- * To design curricula in accordance with these priorities and implement at least two training activities with assistance from IIMI; and
- * To review the organizational constraints identified in the TNA and discuss possible strategies for overcoming them, particularly in relation to human resources development.

Intangible outputs were expected to include:

- * Improved awareness of the major skills needed within the organization to improve job performance;
- * An increased sense of responsibility for implementing the curricula as designed; and
- * An increased commitment to evaluating training results, since the curricula were designed to reflect the assessment of staff and organizational needs.

The expected tangible outputs included:

- * A clear statement of the objectives to be achieved by the end of each training activity;
- * Information about potential participants in the training program (position, work experience, range of age, group size, etc.);
- * A time frame for the training activity;
- * A list of the contents of the training activity;
- * A list of potential trainers or resource persons;
- * A description of the strategy, methods and techniques, and instructional material to be used;
- * The design of training modules; and
- * The definition of follow-up and evaluation strategies.

THE PROCESS OF CURRICULUM DEVELOPMENT

The concept of curriculum development was presented as a "master plan" comprising a comprehensive set of guidelines to help the trainer to manage the learning process. The curriculum should not be inflexible, but should function as a "working script." It defines a step-by-step strategy and a set of activities to be developed during the training program. The curriculum clarifies exactly what is to be learned and how learning will take place. In summary, curriculum development defines the dimensions and structure of the learning process.

Curriculum development defines the dimensions and structure of the learning process.

Assuming that a TNA has been properly carried out and the needs of the training clientele clearly identified, the process of curriculum development should comprise eight stages, as follows:

- * Identification of the potential participants for the training programs;
- * Definition of the general objective of the training programs;
- * Decision on the time frame (duration and possible dates of training);

- * Decision on the training content, based on the priorities assessed during the TNA and the workshop with top management and senior managers of the organization;
- * Decision on the strategy, methods and techniques and instructional material to be used;
- * Decision on the trainers or resource persons and training facilities;
- * Decision on the training evaluation strategies, including content evaluation, process evaluation and program evaluation; and
- * Decision on the financial resources required to support the training program.

IDENTIFICATION OF POTENTIAL PARTICIPANTS

It had already been agreed to implement two training activities, to be conducted jointly by DID and IIMI training staff, in order to develop management training capability among the DID trainers. The workshop was accordingly asked to define the categories of the DID staff to be trained in these two activities, and the DID trainers who should participate in them.

It was decided that the district engineers and irrigation overseers should be the first two categories of staff to receive training in irrigation management, and that the trainers from the DID training center in Kota Bharu should be trained to provide training for all categories of staff. The engineers' training would be provided by the joint efforts of the DID trainers and members of the Faculty of Engineering of UPM.

CURRICULUM FOR THE TRAINING OF ENGINEERS AND IRRIGATION OVERSEERS

The overall aim of the training of engineers and irrigation overseers for irrigation management was to help these two groups of DID professionals to develop the skills needed to improve their job performance in managing irrigation systems. The training contents identified as priorities for the engineers during the TNA itself and in the top managers' session for the preparation the training plan were:

- * Leadership in irrigation systems;
- * Interagency coordination for improving the performance of irrigation systems; and
- * Management of information systems.

The training contents identified as priorities for the irrigation overseers were:

- * Leadership;
- * Interagency coordination;
- * Dealing with farmers;

including how to organize and train farmers and how to communicate effectively in negotiating with farmers and convincing them to accept the overseers' advice.

The workshop participants analyzed the TNA results themselves and noted that several gaps in skills had been consistently cited by the TNA participants. These concerned various aspects of personal and interpersonal development, such as the development of self-confidence, self-esteem, motivation, positive attitudes, and so on. The participants agreed that these topics should be included in the training of both engineers and irrigation overseers. It was considered that the topic of "dealing with farmers" should be included in the training of engineers also, since one of the main concerns of DID was to provide better services to the farming communities so as to discourage them from migrating to the urban areas.

On the basis of these discussions and decisions, and the other steps necessary to define curricula, two separate "master plans," for the training of engineers and irrigation overseers, respectively, were prepared. The contents of these plans are summarized below.

The curriculum for the training of trainers was also discussed and defined. It was decided that the training of trainers program would include the management topics defined as priorities for the training of engineers and the irrigation overseers, as well as the development of training skills in how to plan, implement and evaluate management training programs. The curriculum for the training of trainers is presented in Chapter 11.

Curriculum for the Training of Engineers

The curriculum for the training of engineers was aimed to assist DID irrigation engineers to develop skills necessary to improve their job performance in irrigation systems. These are the skills related to personal and interpersonal development, interagency coordination, leadership, the management of information systems and dealing with farmers.

It was envisaged that, by the end of the training program, the participants would be able to demonstrate their awareness that personal and interpersonal skills are very necessary for their role as engineers, managers and leaders within the irrigation organization, by experiencing and evaluating their own attitudes and sharing their feelings with colleagues. They would be expected to demonstrate their managerial abilities by discussing concepts, experiencing attitudes and skills related to the roles of managers, leaders, coordinators, information managers and advisors to the farmers, and

by designing action plans to implement effective activities for the improvement of irrigation systems.

The training program would be attended by fifteen participants from DID, MADA and KADA. The program would occupy a period of two weeks, and be divided into five segments, each dealing with one of the topics listed above. The main training methods and techniques to be used, ranging from individual to group-focused methods, and including experiential methods and techniques, were identified. The kinds of instructional materials to be used were identified. A bibliography would also be provided to the participants for further reading. Sets of instructional materials would be provided to support the newly developed curriculum and facilitate the learning process. Participants would be asked to evaluate these materials and give feedback and suggestions for their improvement.

*Personal and interpersonal skills are very necessary
for engineers, managers and leaders in irrigation
organizations.*

The resource persons who were meant to participate in the program were identified, and the evaluation strategies and techniques to be used were outlined. The latter would be concerned with content evaluation, process evaluation and program evaluation.

The first segment of the program would deal with personal and interpersonal development. It would cover: the role, functions and qualities of irrigation managers; communication; conflict resolution; interaction with staff and farmers; the personal and interpersonal skills necessary to deal with problem solving and decision making; motivation and influencing others; and the development of self-esteem and positive attitudes.

The second segment would be concerned with interagency coordination for improvement of irrigation systems. It would include: a review of the concept of coordination; an evaluation of interagency coordination processes; writing a case study on interagency coordination; an analysis of an IIMI publication, *Institutions under stress and people in distress* (Merrey 1989); assessing constraints and proposing solutions to improve interagency coordination; and the major elements in the design of an interagency coordination plan.

The third segment would be concerned with leadership in irrigation. Participants would be asked to consider how one could be a leader in an irrigation system, and would go on to discuss the attitudes of a leader as an effective team builder, the role of the engineer in irrigation system management, the idea that "a successful manager is a good leader," and the attitudes of leaders which influence the improvement of staff performance.

The fourth segment would deal with the management of information systems. It would begin with an overview of the DID Management Information System (MIS) and go on to consider database management, MIS for irrigation systems, the management of documents and reports, troubleshooting, hard disk viruses, and so on.

The fifth and final segment, concerned with dealing with farmers, would discuss farmers above the outlet, how to organize irrigators' associations, formal and informal farmers' organizations, potential farmer contributions to the irrigation design process, and an action plan for improving relationships with farmers.

Curriculum for the Training of Irrigation Overseers

The general aim and expectations of the curriculum for the training of irrigation overseers for irrigation management were similar to those of the curriculum for engineers and, except for the management of information systems, were concerned with developing the same range of skills and encouraging participants to demonstrate, in the same way as the engineers, that they had acquired or developed these skills during the program.

The training program would be attended by fifteen participants from DID, MADA and KADA. It would occupy a period of two weeks, and would be divided into four segments, each dealing with one of the topics listed above. The provisions with regard to the main training methods and techniques, the use of instructional materials, the need for feedback from participants, the provision of a bibliography, the identification of resource persons and the use of evaluation strategies and techniques were similar to those in the curriculum for engineers. However, the written materials were summarized in a very comprehensive way and translated into Bahasa Malaysia to facilitate understanding and learning among the participants.

The content of the first segment of the program, dealing with personal and interpersonal development, was the same as that of the first segment of the program for engineers, except that, due to time constraints, it did not include the session on self-esteem and positive attitudes.

The content of the second segment, dealing with interagency coordination for improvement of irrigation systems, was also similar to that of the second segment of the engineers' program. A summary of the IIMI publication was translated into Bahasa Malaysia to facilitate analysis and discussion among the participants.

The content of the third segment, on leadership in irrigation, was identical to that of the same segment in the engineers' program except that it naturally focused on the role of the irrigation overseer in irrigation system management, and not that of the engineer.

The content of the fourth segment for the overseers, concerned with dealing with farmers, was identical to that of the fifth segment of the engineers' program; however, they had two additional days for exercising skills to deal with farmers.

CONCLUSION

The workshop on curriculum development at DID was a very important element in the overall training cycle and greatly contributed to increasing the level of commitment of the DID top management and training staff.

The training plan for the implementation of the training cycle was also discussed during the workshop to emphasize the need for DID and IIMI to carry out each phase

carefully in order to be able to see and measure tangible and intangible results and the impact of training on the performance of staff and of the organization as a whole.

It was pointed out that IIMI's approach to training is strategic, and having been initiated to develop the commitment of DID to training, would continue to give support until DID irrigation managers were fully aware of the importance of the management aspects of irrigation and of the skills and attitudes needed by the staff to manage irrigation systems properly and effectively.

The next steps in the training cycle, to be implemented during 1991, were presented and discussed during the workshop, and decisions on issues relating to the training plan and curriculum development were made. It was decided that IIMI would produce draft training materials to support the proposed curricula for the training of engineers and irrigation overseers. These materials would include examples of research results achieved by IIMI, translated into a variety of comprehensive instructional aids, such as slide presentations, sets of transparencies, summary papers, handouts, scripts for video presentations, and so on. The production of these materials is discussed in the next chapter.

The training of trainers also formed part of the short-term training plan for DID. It was decided that the draft training materials would be used and assessed by the participants in the training of trainers program in terms of their validity and usefulness for the DID staff. The training of trainers is discussed in Chapter 11.

In summary, the implementation of the curriculum development phase as part of the training cycle provided an exceptional opportunity of raising expectations and developing commitment in DID for the support of management training activities which were expected to promote the further development of the organization.

*The curriculum development phase developed
commitment for management training in DID.*

CHAPTER 10

Production of Training Materials

INTRODUCTION

THE PRODUCTION OF training materials to support the curricula for the training of engineers and irrigation overseers was a very important stage in the implementation of the training cycle in Malaysia. The published results of IIMI research on irrigation management were the first source of information used to support the curricula for these two training programs. This was intended to “bridge the gap between research and practice” by using the research results in producing training materials to facilitate understanding of the problems and to encourage the adoption of appropriate solutions. A number of IIMI publications were selected to be translated into various kinds of training materials. Other publications were also used to support the training programs, as described below.

OBJECTIVES AND OUTPUTS

The main objectives of this phase were:

- * To produce appropriate training materials to facilitate learning and ensure effectiveness of the programs;
- * To use IIMI’s research results as the most relevant and innovative source of information; and
- * To involve the trainers in the assessment of the draft materials in order to develop their commitment and sense of ownership in relation to the training programs and the training materials.

The expected intangible outputs of this activity included improved interest and motivation among trainers and trainees and increased confidence among trainers. The tangible outputs included various types of training materials, such as videos, slides, charts, flipcharts, handouts, worksheets, and so on, which would be included in the training modules.

FACTORS INFLUENCING THE DESIGN AND PRODUCTION OF TRAINING MATERIALS

The training materials for use in the first two training programs at DID were prepared initially in draft form by the IIMI Training Unit and subsequently modified during and after being used in these programs, in accordance with suggestions made by the Malaysian trainers.

In designing and producing the first draft of the training materials, IIMI took into account a number of interrelated factors (Craig 1987) including:

- * The number of times the training of groups of engineers and irrigation overseers would be carried out;
- * The facilities or locations where the training would take place;
- * The expected kinds of performance, if at cognitive, affective or psychomotor levels;
- * The follow-up program to help trainees to apply their new skills on the job;
- * Whether the training would be conducted in a formal or informal manner;
- * The ways in which the material would be used by trainers;
- * The characteristics of the DID staff to be trained; and
- * The availability of funds and the need for cost-effectiveness.

Study of these factors enabled appropriate decisions to be made on the kinds of training materials needed to meet the needs of the first DID training programs.

With regard to the first two factors listed above, it was intended that the pilot training programs for engineers and irrigation overseers would be repeated many times, at the DID training centers in either Kuala Lumpur or Kota Bharu, in order to reach all DID staff in these two categories. It was therefore decided to produce a set of training modules which could be kept at each of the training centers, to be used by all DID trainers.

Each set of training modules, shown on page 108, comprised: a curriculum, including instructional objectives for each segment and each day's activities; descriptions of training methods and techniques; and master copies of handouts, worksheets, overhead transparencies, slides and other training media which could easily be reproduced for distribution among participants in the courses. In addition, the modules included flip charts, sets of slides and videos for use by the trainers.

Training objectives were taken into account in deciding on the kinds of training materials to be produced. For example, to facilitate learning related to the cognitive domain, which includes facts and information that need to be easily transmitted, simple kinds of training materials were used. In addition to flip charts and overhead transparencies, other kinds of materials were designed, such as handouts, worksheets,

and so on. However, when the learning process was to be related to the affective domain, illustrative materials such as special charts, pictures and, in particular, videos, showing the kinds of attitudes and behavior which were to be analyzed, discussed and imitated by the participants during role-playing exercises, were used.

The nature of the training activity, whether formal or informal, also influenced decisions as to the kinds of training materials needed. Trainers involved in informal kinds of training, such as on-the-job training at field sites, or when providing follow-up in the workplace, would need to assemble different sets of materials appropriate to the specific task in hand. This implied a need to be able to reproduce copies of specific items in the training modules from the master copies.

Training objectives were taken into account in deciding on the kinds of training materials to be produced.

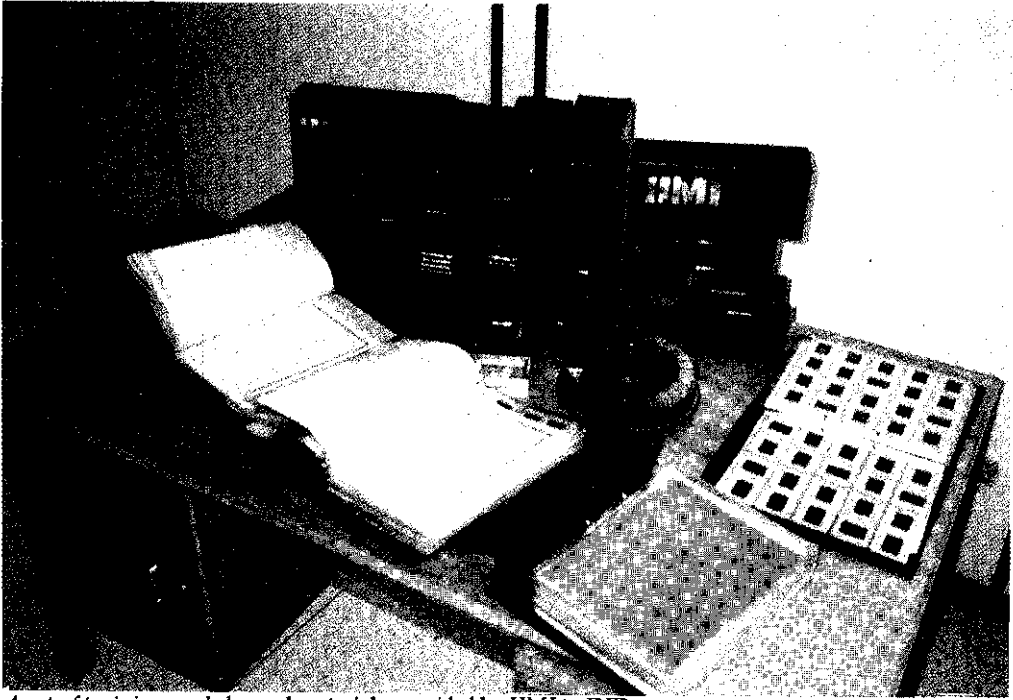
In order to develop the training skills of engineers and other irrigation professionals who had had little or no previous experience as trainers, some of the training materials were designed as instructional aids to support the trainers directly, such as flip charts, charts and overhead transparencies, while others, such as slides and videos, allowed the trainers to alternate their own presentations with prepackaged media presentations.

Easily manageable training aids and comprehensive worksheets, handouts, etc., were produced to meet the characteristics of the trainers and managers. In general, the DID staff work in the field. Since the training program aimed to develop self-confidence among the trainers and managers in communicating easily and effectively with their subordinates in the job environment, the experience of dealing with simple training aids during the program tended to influence and motivate them to design their own transparencies, flip charts or even sets of slides, to attract their subordinates' attention and do a better job as managers when giving instructions and communicating with people.

The training materials were also modified to meet the needs of the participants during the two pilot training programs. To help the irrigation overseers to understand and participate in the training process, for example, the training materials were translated into Bahasa Malaysia, whereas the engineers, who were proficient in English, received all their materials in that language.

The availability of funds and questions of cost-effectiveness had a great influence on the kinds of training materials which could be produced. Most of the materials were produced by IIMI training staff, who prepared the texts, exercises and scripts for slide presentations and videos. However, one planned video could not be developed due to the lack of funds. This was replaced by a set of slides and is expected to be developed later, when funds become available.

This analytical approach to select training materials based upon interrelated needs produced effective results and proved to be cost-effective both for DID and for IIMI. A plan was designed, presenting the program contents along with the instructional objectives for each session and a list of the kinds of training materials which were selected as explained above and which were considered viable as far as the budget was concerned.



A set of training modules and materials provided by IIMI to DID.



Official delivery of two sets of training modules for engineers and irrigation overseers, to Mr. David Welch, Deputy Director General of DID.

TRANSLATING RESEARCH RESULTS INTO TRAINING MATERIALS

Published results of IIMI research which could be relevant to the proposed content of the two training programs were identified, and their suitability discussed with IIMI research staff. The most appropriate publications were selected and decisions made as to the kinds of training materials into which they could most appropriately be translated.

Ten IIMI publications or papers were included in the training modules, as follows:

Institutions under stress and people in distress: Institution-building and drought in a new settlement scheme in Sri Lanka, by Douglas Merrey and P.G. Somaratne (book) (Merrey 1989)

Experiences with organizing irrigators' associations: A case study from the Magat River Irrigation Project in the Philippines, by Honorio Bautista (first special awardee at IIMI) (case study) (Bautista 1986)

The Kimbulwana Oya Irrigation Scheme: An approach to improved system management, by Sunil Gunadasa (second special awardee at IIMI) (case study) (Gunadasa 1989)

The role of the engineer in irrigation system management, by Hammond Murray-Rust (paper) (Murray-Rust 1989)

Farmer organization management: A reconsideration, by David Groenfeldt (paper) (Groenfeldt 1985)

Potential farmer contributions to the design process: Indications from Indonesia, by Douglas Vermillion (article) (Vermillion 1990)

Improving irrigation system management through farmer to farmer training: Examples from Nepal, by N.C. Pradhan and Robert Yoder (working paper) (Pradhan 1989)

Interagency coordination in irrigation environment, by Charles Nijman and Andre Kampfraath (paper) (Nijman 1991a)

Leadership in irrigation schemes, by Charles Nijman and Andre Kampfraath (paper) (Nijman 1991b)

Management of information systems, by Charles Nijman and Andre Kampfraath (paper) (Nijman 1991c).

One copy of each of these publications, in the original English, was provided to each participant in the engineers' training program about one month before the program began. An English summary of each document was also prepared and translated into Bahasa Malaysia for distribution in the same way to the overseers. The documents were also used as the basis for the production of various kinds of training materials, thus translating the results of the research into other media of communication to ensure that the relevant messages reached their intended audiences in ways they could understand.

For example, the publication *Institutions under stress and people in distress* (Merrey 1989) was used in four different ways. First, the book itself was provided to the participants about one month in advance; second, a video script based on the book was prepared by the IIMI training staff and discussed and evaluated by the participants in terms of its content and format; third, a worksheet was designed and distributed among the participants, giving directions and providing questions based on the book for group discussion; and fourth, a tape-slide presentation was prepared, using cartoons to emphasize the main points of the research study and its conclusions and recommendations. The aim of all these approaches to the research material was to encourage the participants to reflect on the proposed solutions and to think about creating their own to solve similar problems in their country.

All the documents were translated into either overhead transparencies or flip charts and into worksheets, again, using Bahasa Malaysia for the overseers. The participants thus had an opportunity of absorbing these research results through at least three kinds of training materials. This exercise was evaluated highly by the participants because they felt that the use of different kinds of training materials, presenting the same content in different ways, helped to reinforce and clarify important points in the original publications which were not always clear at the first reading.

This approach also provided the participants with the opportunity of analyzing and discussing the publications in different ways. For example, they were able to reflect on the research problems and recommendations for solving them from a comparative viewpoint. They got to know the problems encountered in various countries, analyzed and compared them with those they were confronting in their own irrigation environment, and evaluated the recommendations in terms of their relevance, feasibility and suitability to solve the problems in their own country.

Two examples of how the results of IIMI research or case studies were translated into tape-slide presentations for use as training materials are presented below.

Tape-Slide Presentation on Leadership

This presentation was based on the case study by Sunil Gunadasa, an IIMI special awardee, entitled: *The Kimbulwana Oya Irrigation Scheme: An approach to improved system management* (Gunadasa 1989). The case study described how farmers in the Kimbulwana Irrigation Scheme in Sri Lanka were not practicing rotational issue of water. All the farmers wanted water at the same time and only a small quantity of water came into each of the rice lots as a result. This small amount of water was absorbed into the ground through percolation.

One paragraph of the original case study read as follows:

The author then met with the farmers to explain how they could obtain the necessary water supply to meet their cropping requirements. They were

shown the layout of their channel system and the associated soil texture and topography. He explained that simultaneous issues wasted water because of the sandy nature of the soil. Under such circumstances the high seepage and percolation rate did not allow the small flow to cover the area on time (page 15, para. 5).

The author later explained to the farmers that if they took water in turns, they would be able to get sufficient quantities within a short time to irrigate their rice fields. The relevant text in the case study reads:

Further he explained that if water issues were confined only to part of a channel at a time, by irrigating one third of the extent, the discharges could be increased to the pipe outlets due to increase in water head (page 15, para. 5).

The tape-slide presentation used a combination of text slides and cartoons, with accompanying narration, to get its message across. The way in which the original text was translated into the tape-slide format is shown in Figures 6 and 7, in which the slides and accompanying narration based on the two paragraphs quoted above are reproduced.

Tape-Slide Presentation on Interagency Coordination

This presentation was based on the book, *Institutions under stress and people in distress*, by two IIMI researchers, Douglas Merrey and P.G. Somaratne (Merrey 1989). Research at a newly constructed irrigation scheme at Kirindi Oya, Sri Lanka, had identified "conflict among agencies" as one reason for the failure of the crop during an unusually dry season. This is exemplified in the following extracts from the original text of the study:

The field-level officers of other agencies had little contact with officials of the ID [Irrigation Department], and they were rarely seen at each other's offices other than for formal meetings where participation was obligatory (page 56, para. 2).

The other major conflict, of which most officials and farmers were aware, was the tension between the Project Manager (Settlement) and the newly appointed IMD Project Managers (page 56, para. 4).

While the participation of field-channel leaders was not satisfactory for the reasons discussed above, the participation of the officials at such meetings in terms of ID guidelines was even more unsatisfactory. Divisional Officers of the Department of Agrarian Services and Agricultural Instructors of the Department of Agriculture never attended meetings of the distributary-channel organization (page 62, para. 2).

The essence of these paragraphs was condensed into one slide, with the accompanying narration, as shown in Figure 8.

Figure 6. Tape-slide presentation on leadership.

Visual



Narration

Although the reservoir had sufficient water to cultivate the entire irrigable area, they were not getting it in the fields when the water was issued continuously.

Figure 7. Tape-slide presentation on leadership.

Visual

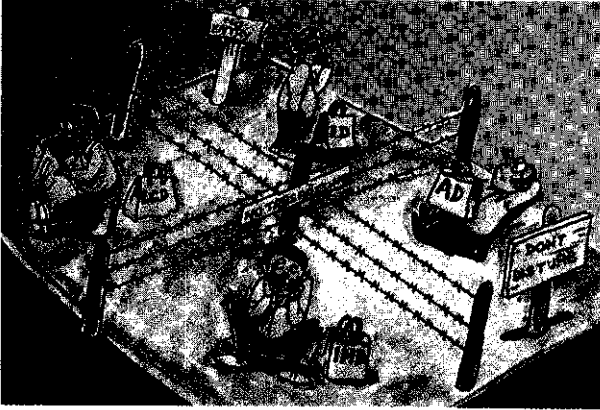


Narration

If the water was issued on rotation to sections, then the required head of water would be available in the channels to send enough water for land preparation within a short time.

Figure 8. Tape-slide presentation on interagency coordination.

Visual



Narration

There was poor interagency communication among the departments.

Figure 9. Tape-slide presentation on interagency coordination.

Visual



Narration

There was also poor communication between ID officials and the farmers. The reasons for water shortage during a breach of a canal bund was not communicated to allay the fears of the farmers during land preparation.

The book had this to say about the lack of farmer/officer communication:

The lack of communication between farmers and the ID was observed on the days when canal bund erosion led to scarcity of water. None of the farmers in Distributary Channel 2 knew the reason for the scarcity on some days (page 63, para 4).

The essence of this paragraph was translated into the slides shown in Figure 9. It shows how the gap in communication between the farmer and the officer occurs, and how the officer reacts to the farmers' irrigation problems when confronted by the farmer.

The authors' recommendations for solving this problem were as follows:

In addition, the ID should make a clear and unequivocal commitment to establishing effective relationships with farmers' organizations, and to promoting actively two-way communication and cooperation between farmers and the ID (page 69, para. 4).

This idea was translated into three slides as shown in Figures 10, 11 and 12.

INVOLVING MALAYSIAN TRAINERS IN ASSESSING THE TRAINING MATERIALS

An important aspect of the process of designing and producing the training materials, was the opportunities it provided for the Malaysian trainers to participate. This gave them a sense of involvement and ownership in relation to the materials, which would be important if they were to use them effectively, and, if necessary, to be able modify them to meet different training needs in the future.

The first stage in involving the trainers was to invite them to evaluate the draft training materials during the training of trainers. The analysis and discussion of the design of the training materials helped the trainers to develop a deeper understanding of them and a greater willingness to use them. During the three-week training of trainers program, the trainers were constantly invited to give a feedback on the training materials being used. The feedback was given either orally, every morning during a special feedback session, or in writing, using special forms designed to evaluate the video and slide presentations and the overall training process and program.

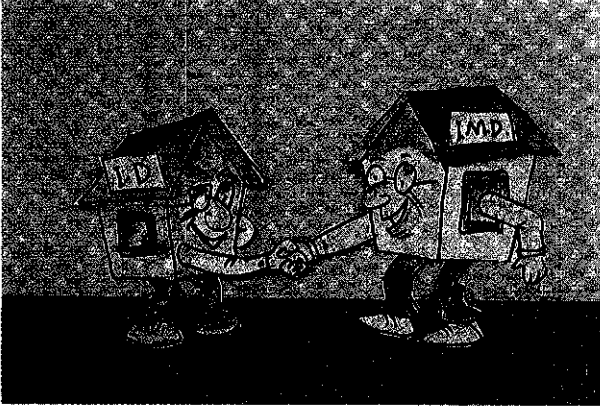
The feedback received from the trainers was taken fully into account by IIMI in producing the final versions of the training modules.

The evaluation form used to collect the feedback on the tape-slide presentations is presented in Figure 13.

Figure 10. Tape-slide presentation on interagency coordination.

Visual

Narration

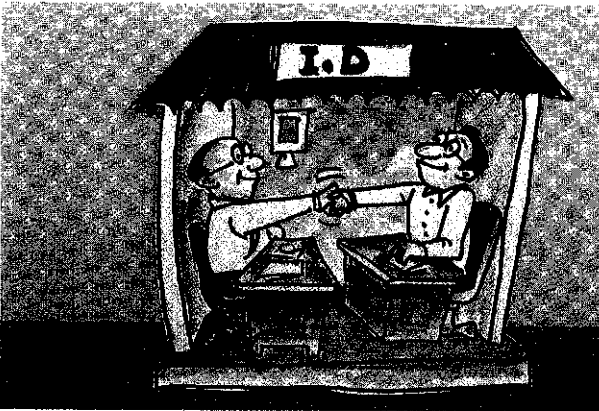


Improving interagency communication.

Figure 11. Tape-slide presentation on interagency coordination.

Visual

Narration

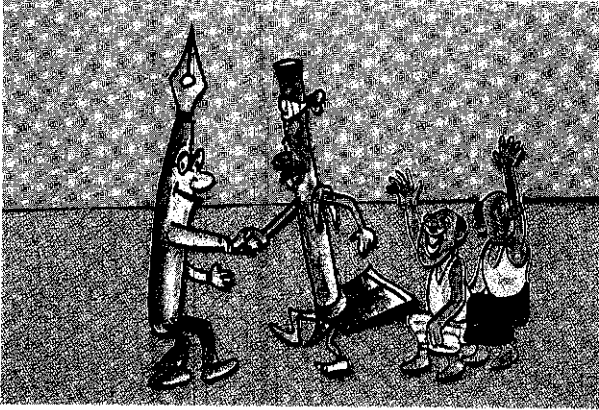


Communication within departments.

Figure 12. *Tape-slide presentation on interagency coordination.*

Visual

Narration



Communication between
farmers and officers.

Figure 13. Tape-slide evaluation form.

EVALUATION FORM—SLIDE SHOW	
IIMI CASE STUDY - THE KIMBULWANA OYA IRRIGATION SCHEME, by S. GUNADASA	
A. The objectives of the slide show are to:	
<ul style="list-style-type: none"> (a) summarize the study done by S. Gunadasa, (b) show visually as well as verbally what you have read in the publication, (c) facilitate your learning and analysis of the institutional aspects emphasized by researchers, and (d) emphasize the conclusions presented in the publication to give you an opportunity to analyze them and evaluate how relevant they are for the Malaysian situation. 	
B. While watching this show, please pay attention to give your feedback afterwards on the following aspects.	
1. Titles :
2. Lettering space, letters, graphics :
3. Connection of verbal and visual concepts :
4. Information sequence or organization :
5. Visual style (colors, contrast and design cartoons):
6. Describe weak and strong points (did you understand the message quickly and well?):
(a) <i>Weak points</i>	(b) <i>Strong points</i>
.....
7. Did you accomplish the objectives defined in item A? Comments.	
.....	
8. Please give your suggestions to improve it, if necessary.	
.....	

The feedback obtained by using these forms to evaluate the tape-slide presentation on the Kimbulwana Oya Irrigation Scheme, which comprised a total of seventy slides, helped the IIMI training staff to improve the presentation before it was used in the pilot training programs. Examples of some of the responses in respect to different aspects of the presentation are given below.

TITLES

The title slides were considered to be effective, relevant to the content and well-done. They were clear and easy to understand.

LETTERING, SPACING, GRAPHICS

The lettering used in some slides needed to be bigger as it looked too small in relation to the size of the frame and the spacing was uneven in some frames. In most slides, however, the lettering was well-organized. Graphics were considered to be good, and some participants suggested adding dialogue to the cartoons, but others thought this would be distracting.

CONNECTION OF VERBAL AND VISUAL CONCEPTS

Narration and visuals were well-interconnected and well-arranged. However, it would have been good to have had a signal to indicate when the slide needed to be changed.

INFORMATION SEQUENCE OR ORGANIZATION

Logical sequence, systematic and easy to understand, with good continuity.

VISUAL STYLE (COLORS, CONTRAST AND DESIGN CARTOONS)

Well-designed and effective cartoons with good visual style.

WEAK POINTS

No weak points were noted, except for the fact that Mr. Gunadasa, the irrigation manager, seemed to work without any support from his subordinates.

STRONG POINTS

Well-defined and well-illustrated story with a precise and clearly pronounced narration. Message was quickly understood and reinforced the text well. Facilitated the learning process. A systematic production which had a good visual impact to highlight the main points accurately.

DID YOU ACCOMPLISH THE OBJECTIVE OF UNDERSTANDING THE SUMMARY OF THE STUDY DONE BY S. GUNADASA?

The slide show helped the participants to understand the case study clearly and meaningfully. It showed the positive side of the story; however, Malaysian irrigation inspectors were considered as not being so fortunate.

DID YOU LIKE OR DISLIKE THIS SLIDE SHOW?

The presentation was considered to be very informative and well-presented.

SUGGESTIONS FOR IMPROVEMENT

The actual layout of the irrigation project area should have been shown at the beginning. The ending should have placed more emphasis on the fact that leaders can be made, as well as born. The differences in the condition of the irrigation scheme before and after Gunadasa's interventions should have been shown.

In addition to commenting on the tape-slide presentations, the participants in the training of trainers program helped to improve various sets of worksheets while exercising related training techniques. Sometimes they provided suggestions as to how to improve the way of giving instructions to perform specific tasks. These contributions were taken into account immediately, and when the exercises were next used in the program, they had already been improved in accordance with the participants' suggestion for them to evaluate again and decide on the effectiveness of the proposed changes.

The willingness of the IIMI training team to accept the participants' inputs during the training of trainers contributed greatly to the development of team spirit and helped to bring about a high level of motivation and satisfaction.

CONCLUSION

This chapter has covered the general aspects involved in making decisions for producing training materials and the utilization of IIMI's research results to strengthen the irrigation management training program for institutional development of DID. The major lesson learned from this exercise was that the involvement of the trainers in the process of producing training materials improved their relevance and developed a sense of ownership which increased the trainers' sense of commitment and responsibility for making the best use of them.

Involving the trainers in producing training materials increased their commitment to making the best use of them.

CHAPTER 11

Training of Trainers

INTRODUCTION

THE TRAINING OF trainers was carried out by IIMI, DID and UPM from 22 April to 11 May 1991. It was held at the Continuing Education Center of the UPM, in Selangor. The general aim of the program was to help irrigation professionals to develop the skills needed to plan and implement management training and development activities for irrigation managers in their organizations. The program was designed to be implemented in a very dynamic and participative way so that the participants would feel confident with their newly developed skills and become responsible for and committed to the personal and professional development of their colleagues within the irrigation organizations.

The program occupied a period of three weeks. It was attended by fifteen participants from DID, UPM, MADA and KADA. The selected participants were senior professionals with recognized experience in their field of work, including engineers, technical assistants, technicians, irrigation inspectors and irrigation overseers. Some of them were already involved in training activities designed to improve the technical aspects of irrigation at the DID Training Centers, while others were just beginning to be involved in training, with responsibility for supporting training activities in the districts or other irrigation sites.

The training of trainers program aimed to help the participants to discover their hidden training and managerial capabilities.

The field staff were brought into this program in response to the desire of the Director General of DID to provide more on-site training, since not all field staff could be trained at the DID training centers.

The level of training experience among the participants varied a lot. A few of them had already been giving technical training, while others had either been assistants to these technical trainers at the DID training centers or were assigned to develop training skills so as to be able to give support to future training activities at the field level.

As irrigation engineers or other irrigation professionals, the trainers generally possessed sufficient skills in engineering, but lacked the necessary skills in training and management. As a result, even the most experienced failed to function effectively as

good trainers, managers and leaders to assist their colleagues to improve their professional performance and produce optimum results for their organization.

Due to lack of proper training and exposure to the concept of the affective domain, the inherent training and managerial capabilities of these professionals had been untapped and unexploited. The aim of the training of trainers program was to guide the participants on a meticulously prepared path to discover their hidden training and managerial capabilities, and to discuss the mysteries of management and communication skills hitherto unknown to them, using appropriate methods and techniques.

The content of this training program had been defined by the participants in the curriculum development workshop. It was designed to provide the participants with the opportunity of learning and developing training skills by doing, by exercising new behaviors, and by creating new methods and techniques to increase the usefulness of the training programs for engineers and overseers. It comprised four segments which reflected the content priorities for the training of engineers and irrigation overseers, as well as content related to how to plan, implement and evaluate training activities during a three-week period in which the trainers could practice their newly acquired training skills.

OBJECTIVES AND OUTPUTS

At the end of each of the four segments of the training of trainers program, the participants were expected to demonstrate specific behaviors as a result of the learning process they had experienced, as summarized below.

- * Personal and interpersonal development

The participants were expected to demonstrate their awareness that personal and interpersonal skills are very necessary for their role as trainers within the irrigation organization, by discussing specific topics, experimenting with new behaviors, evaluating their new attitudes and sharing their feelings with colleagues.

- * How to plan, implement and evaluate management training and development programs

The participants were expected to demonstrate their learning on these topics by discussing training issues and undertaking planning, and implementing and evaluating training activities during the course.

- * Program content for the training of engineers and irrigation overseers

The participants were expected to demonstrate their learning by discussing concepts and attitudes related to management issues, such as leadership, coordination, etc., and by role-playing exercises based on the roles of managers, leaders and coordinators in dealing with farmers.

- * Training practice

Participants were expected to demonstrate their training skills by planning, conducting and evaluating a one-day training program.

The outputs expected of this activity included:

- * Improved self-confidence, motivation and interest on the part of trainers;
- * Greater sensitivity in dealing with people;
- * Improved listening skills to give and receive feedback;
- * Improved appreciation skills to facilitate interpersonal relationships;
- * Improved knowledge of, and attitudes towards, irrigation management issues;
- * The ability to transfer this knowledge and develop managerial skills among irrigation management professionals; and
- * The ability to plan, conduct and evaluate management training programs.

METHODS AND TECHNIQUES

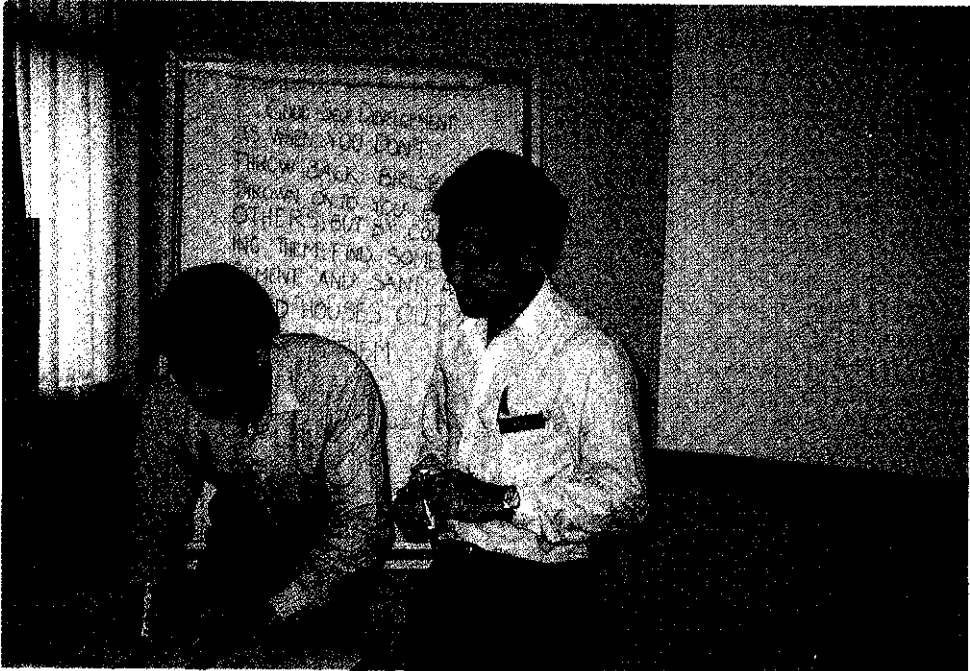
A variety of methods and techniques were used in the training of trainers program, ranging from individual to group-focused methods, including experiential exercises and group dynamic techniques. These included: case studies, role playing, "trip around the table," brainstorming, demonstrations, group discussions (small and large groups), panels, integrated panels, workshops, nominal group techniques, and so on.

The techniques were sometimes applied in the classical mode and sometimes in modified versions to meet the specific needs of this program, which emphasized full participation, relaxed interaction and opportunities to create new concepts and develop different ideas. For example, the panel technique was sometimes used in the classical mode, when selected panelists discuss a topic without intervention from the audience, sometimes in a modified form to permit frequent intervention from the audience, and sometimes as an integrated panel which gave participants the chance of integrating ideas by exchanging partners between groups.

The participants were invited at frequent intervals to evaluate the effectiveness of the strategies and techniques being used, and to suggest modifications or improvements which would facilitate motivation and learning. This opportunity to exercise creativity was a very important element in the training of trainers and the participants were fully supported and encouraged to experience it. This contributed enormously to the development of self-confidence among the participants.



Mr. Nik Abdul Hamid, as participant of the training of trainers, practices his training skills.



Mr. Nik Ahmad Ariff bin Sulaiman and Mr. Azizi bin Abu Bakar preparing training materials for presentations.

TRAINING MATERIALS

The sets of training materials produced by IIMI were introduced to the participants, who were expected to use them during the sessions and provide feedback on their effectiveness and suggestions as to how they could be improved, if necessary.

EVALUATION STRATEGIES

The evaluation of the training activities was an important element of this exercise. The participants were invited to evaluate the program, the group and their own development through different methods and on various occasions. The evaluation strategies used may be summarized as follows:

CONTENT EVALUATION

- * Conducted through both general and specific pretests and post-tests during the training process to keep the participants informed about their learning development.

PROCESS EVALUATION

- * Conducted through rating scale forms and questionnaires to enable the participants to assess personal and group development during the program. This evaluation strategy helped to improve observation skills among the participants.

PROGRAM EVALUATION

- * Conducted through a questionnaire specifically designed for the participants to evaluate aspects related to the training plan, general training organization, training implementation (including methods, techniques, trainer's performance, instructional materials, etc.), and the evaluation strategies used during the program.

OPENING SESSION

The program began with an interactive exercise to facilitate friendship among the participants. This was followed by a pretest which aimed to evaluate the participants' knowledge of the managerial aspects of irrigation.

The participants discussed their expectations of the program with a partner. Among the expectations mentioned were the following:

- * To have a clear understanding of what management training is all about, as opposed to just giving lectures on technical issues;

- * To self-improve in management training, including changes of attitudes, increase of knowledge and development of special skills;
- * To understand and be familiar with management techniques as applied to irrigation;
- * To be equipped and motivated to train irrigation officials in management aspects of irrigation systems;
- * To identify weaknesses and rectify them, as well as to identify capabilities and improve them;
- * To learn how to help others to improve and develop themselves;
- * To design, implement and evaluate training programs;
- * To gain more knowledge in management of human resources;
- * Most engineers lack interest in irrigation schemes, so we expect to learn how to influence them to be fully committed to carry out irrigation works; and
- * To acquire more knowledge in irrigation management so as to be able to discuss confidently with the farmers and try to solve their problems immediately.

PERSONAL AND INTERPERSONAL DEVELOPMENT

This segment covered a number of topics which had been identified as basic needs for the improvement and development of professional and personal skills during the TNA exercise, and which had consequently been included in the curricula for the training of trainers, engineers and irrigation overseers.

Trainers responsible for developing managerial skills among irrigation professionals are themselves expected to develop skills for selecting appropriate training techniques according to the subject matter, defining objectives, being able to switch from one technique to another to maintain learners' attention at a high level, and so on. However, other kinds of skills are also needed, such as those related to the development of positive attitudes, self-control, self-confidence, motivation and so on. This segment was designed to fulfil these needs and equip the trainers to manage training sessions in such a way that they could feel self-confident and enthusiastic towards training activities and promote motivation and interest in the learning process among training participants to encourage them to apply the knowledge they had acquired in the job environment after the training was completed.

Topics covered during this segment included: the role, functions and qualities of irrigation managers; communication; conflict resolution; interaction with staff and farmers; self-improvement skills (reflecting on the Johari Window and transactional

analysis); personal and interpersonal skills for problem solving and decision making; motivation and influencing others; development of self-esteem and positive attitudes.

The participants were invited, first, to try to assess their own management qualities and second, to identify the good qualities of a successful manager known to them. Through sharing their personal experiences with others, the participants learned how to get the best results through proper communication and feedback. The whole objective of this section of the program was to introduce the participants to topics such as communication, conflict resolution, transactional analysis and motivation, with which they had not previously been familiar, and to help them to develop positive attitudes towards their work as trainers. The exercises were designed to open new vistas in the minds of the participants, making them look at their roles in the organization from a new perspective.

A series of exercises were developed during this segment. Among others, the participants were asked to complete a self-analysis form entitled "What kind of boss am I?" to evaluate their own performance as managers. The form included twenty statements such as: "how effective am I at influencing others to accept my point of view?," "how effective am I at working with my subordinates to develop and gain agreement on work objectives?," and so on. Participants graded their own performance in respect of each question on a scale from 1 to 5. The exercise not only provided the participants with the opportunity of rating their own performance as managers, but also helped them to become aware of aspects of management functions to which they had not been exposed before. The results showed that the participants as a group considered themselves to be moderately to highly effective as managers.

The objective was to help the participants to develop positive attitudes towards their work as trainers.

Another exercise was intended to highlight the best qualities of a good manager. The "take five for better brainstorming" technique was used. In the first phase, individual participants were invited to think of an efficient manager they had worked for and to highlight the qualities which made that person outstanding as a manager. In the second phase, small groups prepared consolidated lists of individual contributions from which they selected the five most prominent and effective qualities of a good manager. The group lists in turn were consolidated to produce a final list of the five best qualities of an irrigation manager.

These were: being hardworking; being responsible; being able to recognize individual ability and make full use of it; team spirit; and sound technical knowledge (being resourceful). Among these, responsibility and team spirit were identified as the most important. Other valued qualities included; self-discipline; initiative; being a good motivator being firm and fair; and being flexible.

The participatory approach helped to improve the personal and interpersonal skills of the participants. Some of the lessons learned were: they became conscious of the qualities of a good manager; they were able to set criteria for identifying the best qualities of a manager and to make group decisions; they developed perception and improved their sensitivity, since the exercise required that the final list should represent the most popular qualities of a manager among all groups; and they learned about team

building and the need to be able to modify their own ideas to support the preference of the majority.

The method was very effective and fruitful in helping the participants to experience and analyze their feelings through either failing or succeeding in influencing and convincing their colleagues to accept their own ideas. It also provided an opportunity of comparing similar situations from the participants' own experience in participatory decision making, where adults were expected to respect the views of the others as a team, in order to make decisions. Most of the participants took part actively in this exercise, which provided an excellent chance for them to reflect on and develop good managerial qualities as a result.

The participatory approach helped to improve the personal and interpersonal skills of the participants.

"Skills of competence" was another example of an exercise which aimed to help the participants to reflect on and assess their own way of being (self-concept) when relating to people, and to discuss these personal and interpersonal behaviors with a chosen partner.

This exercise helped participants to do a self-analysis, to listen and help others to analyze themselves, and to bring to light the personal and interpersonal aspects of each individual and the impact which they can have on others. Some participants subsequently commented that they felt very embarrassed at the beginning of the exercise, but observed that this feeling decreased as the exercise progressed and their partners showed interest in their personal information. Statements by participants as to the main impact of the experience included the following:

- * Having a chance to take a good look at myself through self-evaluation and to find out both the strengths and weaknesses that I have.
- * Learning about human behavior is something new to me and I find it interesting.
- * To know myself better. Overall I am all right but I have to improve my "open-self" more, then my interpersonal relationships can be more effective.
- * I have found out that I need to change my attitudes. Be a good listener and have a right motivational approach.

Participants were also invited to experiment with different ways of communicating to compare their effectiveness (Edwards 1989). In a one-way communication exercise, one participant was asked to describe a drawing, while the others tried to reproduce it from the verbal description without asking any questions about it. Since the communication was only one-way, the drawings produced by the participants did not in any way resemble the original. The same process was then repeated with a different drawing. During this second exercise, however, the participants were allowed to ask questions about the drawing. The results were much closer to the original,

demonstrating the effectiveness of two-way communication as a means of imparting information.

The exercise helped the participants to reflect on their own behavior when communicating with their subordinates. The major lesson learned was how and why one needs to communicate properly with subordinates, in order to reach correct and precise understanding for improving the effectiveness of the organization. Some participants said that they would like to change their own attitudes in order to communicate better with their subordinates.

Participants were surprised by their new understanding of themselves in relation to other people.

Participants also carried out another exercise designed to investigate their interpersonal style by self-analysis of the extent to which they were prepared to expose their thoughts and views and receive feedback from their peers or subordinates. A brief presentation on the Johari Window (Biddle 1980), introduced the idea of four interpersonal styles. Participants were invited to reflect on the characteristics of individuals who present specific behaviors and on the consequences which such behaviors produce in a group environment. They were also invited to provide some examples of their own interpersonal relationships in the work environment to illustrate the Johari theory. Afterwards they each produced their own Johari chart to demonstrate the way they saw themselves relating to their subordinates.

As a result of this exercise, the participants were surprised by their new understanding of themselves in relation to other people. They were clear on the fact that to maintain the ideal behavior for interpersonal relationships, they should frequently exercise the processes of asking for feedback and self-exposure. This behavior contributes to developing frankness and sincerity in the work environment, helping colleagues and subordinates to avoid misunderstandings.

Responses to a question on the impact of this session included the following:

- * Knowing the importance of feedback in relation to opening myself to better relationships as recommended by the Johari Window theory.
- * Having a chance to take a good look at myself through self-evaluation and to find out both the strengths and weaknesses that I have.

In summary, as a result of several exercises practiced during this session, the participants had the opportunity of developing many different skills. Among various lessons learned, this segment facilitated the development of sensitivity and self-confidence in the participants. It also influenced their openness to discussing issues related to their behavior and the need to change it in order to be more effective as trainers in the irrigation environment. They learned, by practicing, how to give and receive feedback, and evaluated the impact of this new behavior in facilitating interaction and friendship among themselves.

Participants provided very positive feedback on this session, either orally, every morning, or in writing using special evaluation forms. One of the participants stated that:

Training in its true sense, where participants develop themselves towards becoming better humans, makes them look within themselves to discover their weaknesses and potentials, and shows them the attitudes and ways to motivate and further develop their potentials and try to overcome their weaknesses. The objective of this training was clear and I do believe was achieved 100 percent.

PLANNING, IMPLEMENTING AND EVALUATING MANAGEMENT TRAINING AND DEVELOPMENT PROGRAMS

At DID, most trainers were entrusted with training responsibilities without having had the opportunity of being exposed to the adult learning process and modern training techniques previously. The assumption was that, since they were senior irrigation engineers or other irrigation professionals, they were able to function as trainers from time to time. They were usually assigned to work at DID training centers or at on-site locations. While a few participants had managed to develop training capabilities while they were performing their duties as trainers, many others had tried hard to develop the necessary knowledge and skills in training, but had not been successful. As a consequence, many of the trainers were demotivated and confused about the difference between training and teaching, treating adults as students while conducting training activities.

This session of the program helped the participants to learn how to plan, implement and evaluate a management training and development program. It was conducted during two days and included brief presentations, discussions and group exercises to develop the following topics:

- * The role and qualities of the trainers of irrigation professionals;
- * Designing training activities
 - training needs assessment
 - curriculum development;
- * Defining training objectives;
- * Implementing training programs
 - selecting strategies, methods and techniques
 - planning and producing training materials;
- * Dealing with instructional aids; and
- * Evaluating training activities.

Various exercises were performed during this session. Among others, groups of participants were invited to list the various skills they considered necessary for a trainer, to identify the constraints which may prevent the implementation of a management training and development program, and to provide suggestions for overcoming these constraints. The results were discussed in a plenary session.

Although the participants identified several necessary skills for a good trainer, the most common were: communication skills, self-confidence, experience and knowledgeability. Among the major constraints on the implementation of training programs cited by participants were: lack of training skills, lack of funds and lack of departmental support. They also agreed that bureaucratic barriers, mainly related to job commitments, made supervisors reluctant to allow staff to attend training courses. The solutions suggested for overcoming these constraints were: the provision of training of trainers courses, increased financial support, and increasing awareness of the importance of training among staff and supervisors.

The common misconception that anyone who can deliver a lecture can also train must be disregarded.

This exercise provided participants with information about the requirements for developing training activities, ranging from the support of the top managers and staff supervisors to financial support and suitable training facilities. In addition, it helped them to look for alternative practical solutions to allow them to implement training activities.

The major lesson learned during this exercise was that the common misconception that anyone who can deliver a lecture can also train must be disregarded. Many participants pointed out the misunderstandings that exist in respect to training. One stated that the strong point of this program was that:

It brought a new sense of understanding to the word "training." The idea of training had been effectively translated into games, yet it had a more positive effect on our cognitive and affective domains.

He understood that training requires special skills and that participants can learn properly when training is conducted in a motivating and participative way through games, role-playing, and so on.

An exercise "questions about questions" (Parry 1991) was proposed to facilitate creative thinking. A series of fourteen questions, reflecting difficult situations likely to be faced by trainers while conducting a training program, were distributed among five groups.

This exercise was carried out through the "trip around the table" technique (see Figure 14), which provided the participants with the opportunity, first, of discussing the questions within their own groups and to formulate solutions, and secondly, to "travel" around the other four tables to collect more suggestions to improve their own group's solutions.

Figure 14. The "trip around the table" technique.

TECHNIQUE: Trip around the table

DIRECTIONS:

1. Form 4 groups of participants:

A B C D

2. Each group will elect a rapporteur.
3. Each group will work on one question assigned below.
4. The groups will have 20 minutes to discuss and respond to only one question.
5. The *rapporteur* will compile the group responses on a sheet of paper (should be a list of about 10 items).
6. In the next step, the rapporteur will begin the "trip-around the table." He/She will have 7 minutes to visit each table.
7. He/She will present his/her group question and response to the new table and will collect contributions from the participants to improve his/her list.
8. After visiting the other three tables, he/she goes back to his/her own group to share the contributions collected during the "trip" and make a group decision on the five major priorities in 10 minutes.
9. The rapporteur will write these priorities on the flip chart to be presented to the whole audience (5 minutes).
10. Each group will have 10 minutes to present the results of item no. 9.
11. At the end, the participants will be invited to give feedback on the process of the exercise, including advantages and disadvantages for the learning process and technique.

The questions dealt with the way trainers should behave when facing difficulties in relating to trainees during a training situation, for example: As the trainer, how do you behave if the majority of the training participants are silent and do not react to your questions? How do you get them involved? How should the trainer deal with a trainee who asks irrelevant questions that interfere with the flow of instruction?

At the final stage of this exercise, the rapporteurs presented the solutions proposed by the groups and discussed alternatives when necessary.

Participants were asked to read the article from which the questions had been taken, and to compare their proposed solutions with those suggested by the author. This proved very gratifying for the participants, since most of the solutions proposed by the author, a well-known international training expert, were very similar to those put forward by the participants, who were not experienced in training management, but nevertheless proved to be sufficiently sensitive and confident enough to identify effective ways to overcome training problems.

The lesson learned during this exercise was that even the most difficult problems can be easily solved by a group of people who have sensitivity, interest and a willingness to listen to others and take advantage of their suggestions. The value of team work was very much appreciated by the participants during this exercise. One of them expressed his appreciation of the experience as follows:

The different style of learning, i.e., from the student-teacher method (one-way communication) to the group participation-facilitator relationship, produced surprising results that I never expected.

Each of the participants was next invited to read a text about "how to evaluate knowledge and attitudes" and to define five examples of performance objectives related to the text content. These were then discussed in small groups. Summaries of the group discussions were presented and discussed in a plenary session to make sure that the participants had fully understood the importance of these issues in designing training programs.

This exercise not only showed how to define performance objectives and explained their relationship with evaluation tools, but also emphasized the importance of taking these issues seriously so as to be able to compare the expected results of the training programs with those actually achieved, in terms of improving staff performance within an organization. Evaluation was recognized as an effective tool which helps to improve ongoing training activities and the design of future training programs.

Participants became aware, during this exercise, of the lack of concrete information about the effectiveness of the training activities they had undertaken so far. They realized that they had never defined training objectives clearly, and had not evaluated training activities properly because they lacked the skills needed to do so. The exercise also helped them to realize that training often does not show any useful and concrete outputs to the organization, due to the lack of clear objectives and ways of evaluating results. Managers are therefore often skeptical of the value of training and do not give support to it, including not releasing their subordinates to attend training programs. One consequence of this attitude is the demotivation experienced by some of the trainers, who felt that they had "unsatisfactory job prospects, for example, few opportunities for promotion" when they were assigned to work at training centers.

PROGRAM CONTENT FOR THE TRAINING OF ENGINEERS AND IRRIGATION OVERSEERS

Training programs for engineers and irrigation overseers, who comprise most of DID staff, had to be mapped out in detail with the future trainers. This would enable them to develop specific skills to assist these irrigation professionals to improve their managerial abilities for better performance at their organizations.

This segment dealt with four major topics, which had been identified as priorities for the training of engineers and overseers both during the TNA and by the top managers. The four topics, which were studied during an eight-day program, were:

- * Interagency coordination for improving the performance of irrigation systems;
- * Leadership in irrigation systems;
- * Management of information systems in irrigation organizations; and
- * Communication with farmers:
 - how to approach and interact
 - how to develop farmer organizations
 - how to design, implement and evaluate training for farmers.

The objective of this segment was to give the trainers the chance of reflecting on and discussing these topics and of becoming familiar with the kinds of training methods and techniques which could facilitate the development of positive attitudes for promoting effective learning.

A range of training materials was prepared to support this segment, as described in Chapter 10. Some of these translated IIMI research results into formats which would facilitate their dissemination, discussion and learning among the participants. The materials provided fresh and practical information through worksheets, giving step-by-step directions for using specific training techniques, and included case studies translated into tape-slide presentations and video scripts, as well as articles which had been specially written by members of the training team to meet the priorities identified by participants. A series of readings and exercises were completed during the sessions.

The topic of interagency coordination, for example, was presented and discussed through several activities designed to facilitate understanding of the importance of this process within the organization. The participants were invited to explore the consequences of poor coordination in services like irrigation, agricultural extension, credit provision and cultivation decisions taken by farmers.

An exercise on assessing constraints and proposing solutions to improve interagency coordination was conducted through the "take five for better brainstorming" technique. To overcome the constraint of poor organizational and personal communication, for example, the development of interpersonal skills and the human touch was proposed as a solution.

Participants were also assigned to small groups and asked to write a one-page case study of an interagency coordination activity they had experienced in the past and to share it with the other participants. Several guidelines were provided to help participants prepare this exercise. The results were presented orally by the participants using flip charts, and provided the basis for a plenary discussion.

The IIMI case study on the Kirindi Oya Irrigation Scheme (Merrey 1989) was distributed to the participants for analysis well in advance of the training sessions. Based on this case study, the participants were requested to furnish reasons for the failure of the coordinating efforts and make recommendations as to how to avoid such situations in future. The case study highlighted the poor interagency coordination efforts of the project manager and participants were asked to relate these experiences to their own situations and discuss.

The participants were divided into small groups to discuss and report on the different qualities required of managers in different situations and to try to distinguish between a manager and a leader. They were also asked to list different personality traits required of a manager in handling different situations.

The case study on the Kimbulwana Oya Irrigation Scheme, by Sunil Gunadasa (Gunadasa 1989), told the story of an irrigation manager who managed to successfully steer his irrigation scheme away from possible disaster. Participants were provided with copies of this case study and asked to identify the positive aspects of the manager in question. They also carried out a self-analysis exercise to compare their own leadership qualities with those of the manager-leader in the case study and identify possible areas for improvement.

The qualities of a leader who can take over a dilapidated physical system having uncooperative farmers with a lot of conflicts, were identified as:

- * Possess task-relevant knowledge;
- * Self-confidence;
- * Dynamism;
- * Being a good listener;
- * Being a local who respects traditional values; and
- * Being an exemplary leader -- able to coach, guide, support and reward.

Personality traits required of a leader able to deal with a difficult - to - control situation were identified as:

- * Dominance;
- * Possess task-relevant knowledge;
- * Being energetic;
- * Self-confidence;

- * Intelligence; and
- * Patience.

The way to influence others, in the absence of proper incentive schemes, was described by the participants as "leadership by example".

The most positive aspects which contributed to the success of the scheme leader in the case study, and consequently to the success of the system itself, were identified as:

- * Dedication and commitment;
- * Team work;
- * Sound technical knowledge;
- * Interpersonal skills and good communication; and
- * Responsive and cooperative farmers.

In another activity, the IIMI document, *The role of the engineer in irrigation system management*, by Hammond Murray-Rust (Murray-Rust 1989), was used as the basis for a role-playing exercise, in which participants played the roles of prosecuting and defending counsel arguing for and against the question, "Does this text emphasize the role of the engineer as a leader?" or as members of a jury making the final decision on the case.

PRACTICING TRAINING SKILLS

Another important aspect of the training of trainers program was the practice of training skills. The trainees were subjected to almost two weeks of training methods, techniques and information. The testing of their performance as future trainers was therefore a vital stage of the program. The objective of this part of the program was to provide the participants with an immediate opportunity of practicing what they had learned during the previous sessions and to provide a feedback on their performance.

The trainees were divided into three groups, each of which was responsible for planning and organizing a one-day training session in which the members of the other two groups acted as trainees. The members of the leading group were expected to determine the content of training they were going to develop, refer to additional books and literature on the subject, write performance objectives, prepare lesson plans, design audiovisual materials or transparencies and apply new approaches in adult teaching, (i.e., the participatory approach through discussions and group techniques learned through the recent training program) and actually conduct the training. The training session was video-taped and subsequently played back so that participants could assess their own strengths and weaknesses.

Feedback was also received from the other participants in their role as trainees, who evaluated the trainers for the day through a questionnaire. This instrument included questions on the trainers' preparedness, personal delivery styles and group skills in leading group discussions, and on the psychological learning climate and the responses of the learners with respect to receptivity, content, method, group interaction, responsiveness to trainers' directions and overall group reaction. This session was evaluated highly by the participants.

SELF-EVALUATION BY THE PARTICIPANTS

An example of how the self-evaluation process was applied during the program is provided by the results of the evaluations of the first week's activities.

Most of the participants took a positive view of their achievements during the first week. The exercises had helped them to evaluate their interpersonal skills in communication and also to understand the important qualities of a good manager. They also understood the importance of having managerial skills (in addition to technical and engineering skills) to enable them to run the organization in an orderly manner and gain optimum results from other employees. After the session on the Johari Window, some participants expressed a desire to improve their "open self" so as to encourage feedback from colleagues which would help them to become successful managers. They were impressed by the manner in which the presentations were done, and by the audiovisuals and the exercises which were meant to consolidate what had been already presented in the lectures.

Some participants experienced time constraints in completing the exercises, while others had difficulty in understanding some of the terms used in the lectures, and there was a language barrier. Due to the tight schedule, some could not understand certain concepts. Some considered the presence of video operators in the lecture hall to be a hindrance to their concentration, as their attention was diverted when the operators moved about. Some felt homesick after a while, which affected their learning process.

Asked what was the most confusing or unclear part of the program, some participants commented that everything was clear and well-elucidated. However, others had doubts as to whether conflicts could be totally eliminated, and asked questions such as "what is the effective distance between the communicator and the audience?" and "how should I give and receive feedback?" etc. Some felt that the handouts were too brief and feared that they might forget everything once the workshop was over.

With regard to feedback on program procedures, most participants felt that the program had been well-organized and that the group discussions were lively, responsive, innovative, encouraging and interactive. However, some felt that the discussions had drifted off into unrelated fields at times.

In relation to the members of their present group, participants thought they were very committed, serious, mixing well and casting aside their inhibitions despite the differences in their positions. They were friendly, lively and there was an atmosphere of warmth.

Most participants considered that the training materials were good, adequate and informative, though some felt that more explanatory notes could have been provided. Some suggested that a bibliography of texts used should be created, to be kept handy

for conducting similar programs in future. Finally, the participants felt happy about the cordial atmosphere and interaction of the group, despite the differences in their positions within their parent organizations.

CONCLUSION

The training of trainers program lasted three weeks and this chapter has only been able to summarize the main features of what was a complex and intensive program. Successful participation demanded a high level of dedication on the part of the trainees, who came to realize that the process of learning can be very exciting and rewarding when developed through a participative approach and within a climate of friendship and caring.

This point was emphasized in the closing speech of the Director General of DID at the end of the workshop. While DID had concentrated only on technical training in the past, he looked forward to the inclusion of management aspects in the other training programs envisaged for the future. It was hoped that the trainers who had participated in the program would act as multipliers to produce more co-trainers and make it possible to disseminate their knowledge and skills to other areas within DID. This type of training should be extended to the top managers as well, to motivate them to support these training programs.

The Director General stressed that the ultimate goal of all these training activities was to eventually give the farmers a better quality of life, economically stable and sustainable, so as to be able to manage the irrigation system themselves.

CHAPTER 12

Monitoring Training by the Malaysian Trainers

INTRODUCTION

AN IMPORTANT ELEMENT in the implementation of the training cycle in Malaysia was the monitoring, by members of the IIMI training team, of two training activities carried out by the Malaysian trainers who had been trained under the training of trainers component described above. The monitoring process was designed to ensure that the training curricula and training materials for engineers and irrigation overseers, which had been revised during the training of trainers, were being used effectively. It was also important as a means of demonstrating support for the Malaysian trainers as they applied their newly developed skills in practice for the first time, and helped to reinforce their self-confidence in this respect.

The monitoring process demonstrated support for the Malaysian trainers as they applied their newly developed skills.

The first of the two training activities was a course for irrigation overseers, which was conducted by an irrigation engineer and a senior irrigation inspector from DID and which took place at the DID training center in Kota Bharu from 26 October to 6 November 1991. The second activity was a course for engineers, conducted by two DID irrigation engineers and one member of the Faculty of Engineering of UPM. This took place at the Regional Centre for Training in Penang from 13 to 26 November 1991.

OBJECTIVES AND OUTPUTS

The main objective of the monitoring activity was to ensure that the effort expended by DID and IIMI in assessing the real needs of the staff and the organization, in designing training curricula and materials to meet those needs, and in the training of trainers, was producing useful results in terms of the effective implementation of training activities by the DID trainers. These training activities were expected to contribute to increasing the quality of work, improve motivation among DID staff and help to improve the performance of the organization.

The outputs expected from the monitoring activities included:

- * Effective use of the training modules, including the curriculum and all training exercises and materials;
- * Assessment of the validity and usefulness of the curriculum for the training clientele;
- * Feedback from participants for improving the training activities;
- * Increased motivation and self-confidence among trainers in the application of modern training methods and techniques;
- * Greater sense of responsibility among trainers;
- * Greater commitment on the part of trainers to achieving effective results;
- * Improved professional morale and values among trainers; and
- * Increased self-esteem among trainers.

In monitoring the implementation of the training programs at DID, five main elements were considered by the IIMI training staff, namely: the trainers or facilitators; the trainees or participants; the training materials; the training environment; and the evaluation of the training activities (Craig 1987).

EVALUATING THE TRAINERS OR FACILITATORS

The trainers made the initial arrangements for the training courses as they were expected to do. They selected the sites, determined the dates of both courses, notified the participants, assessed the availability of equipment and made photocopies of the training materials from the training modules for distribution among the participants. They showed a natural initial anxiety at the beginning of the courses, but clearly felt confident later on, and knew what they were going to do, how they were going to do it, and why.

All the trainers adopted a similar training style when delivering information to the participants, instructing them in tasks to be carried out, or in simply relating to the participants. They inspired learning on the part of the participants by demonstrating their respect for the participants' experience, their maturity and their willingness to voice their ideas, feelings and suggestions for solving problems.

It was observed that one of the trainers sometimes behaved in a "professorial" manner, presenting his own point of view very strongly and expecting the participants to approve of it. This style of behavior diminished gradually during the program, as the participants were assertive enough to give him feedback in this respect. The feedback exercises helped this trainer to become aware of the impact of his behavior on

the group and encouraged him to admit its weaknesses and change his training style. In general, the training style of the Malaysian trainers contributed to maintaining the roles they were meant to play as leader, facilitator and catalyst for the participants' learning.

The major responsibilities of the trainers were:

- * To create a supportive climate for the program;
- * To make good presentations;
- * To conduct exercises and facilitate group discussion;
- * To manage the presentation of the results of group exercises;
- * To evaluate the training program; and
- * To plan the return of the participants to their respective jobs.

Creating a Supportive Climate for Training

To create a supportive climate for the training programs, each of them began with an interactive exercise. The trainers decided among themselves who would lead these initial sessions, and it was observed that those who were more sociable and felt more comfortable with people generally volunteered for this task. The other trainers joined the groups and participated actively, facilitating interaction and friendship among the participants.

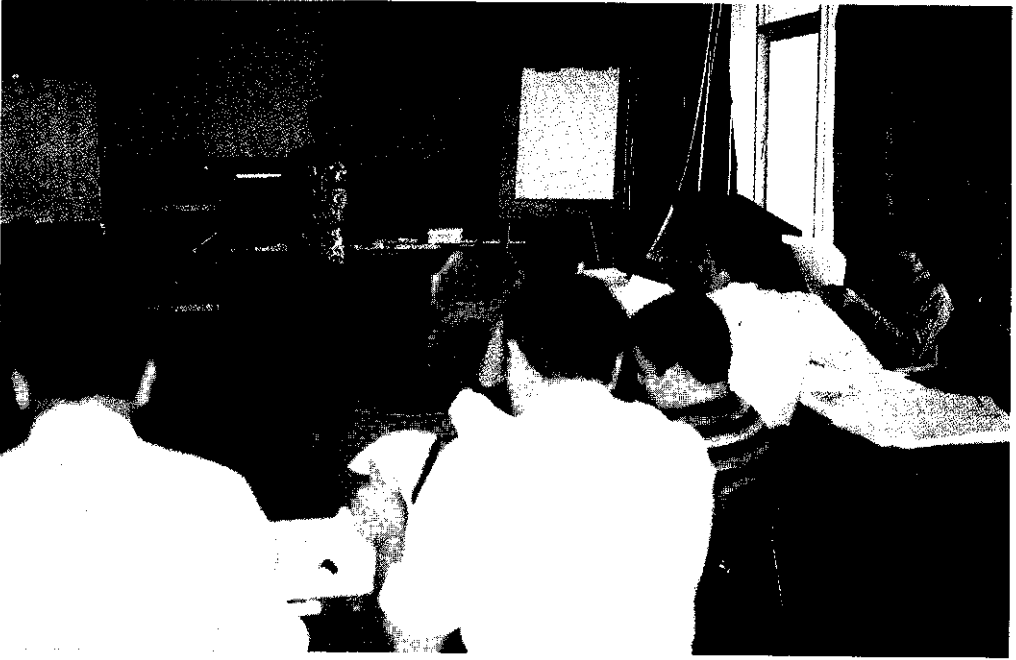
The trainers demonstrated very positive attitudes during these interactive exercises. Those who led the exercises projected a high level of self-confidence, interest in listening to the participants, encouragement, motivation and clear signs of accepting responsibility for ensuring a good group climate. The others showed attitudes of supportiveness and team spirit which transferred to the whole group their commitment to make these activities a real success.

The trainers who managed the training of irrigation overseers spoke in Bahasa Malaysia all the time. This also helped to maintain a high level of interest and active participation among the trainees.

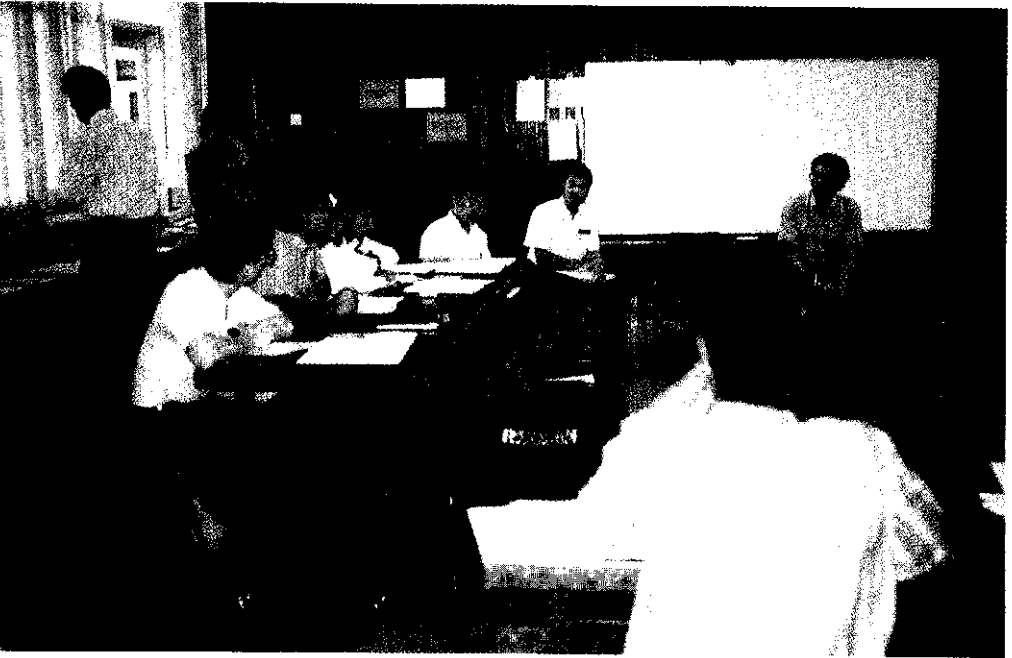
Another important attitude presented by the trainers was that of openness. During the sessions they maintained a very open way of dealing with the participants, acting naturally and confidently. This attitude developed feelings of trust among the participants who became relaxed, frank and very participative. This was confirmed by comments from participants, for example:

The feedback made me realize my own weakness. I will work towards rectifying it.

Now I am able to voice my opinion on controversial issues.



Mr. Mat Shariff bin Abu Bakar, Trainer, DID, leading the implementation of the training of irrigation overseers.



Mr. Nik Ahmad Ariff bin Sulaiman, Mr. Azhari bin Ghazali and Prof. Kwok Chee Yan, implementing the training of engineers.

Making Presentations

The performance of the trainers when making presentations was influenced by both psychological and physical factors. The psychological factors were of particular importance in Malaysia, and had a great influence on the performance of the trainers in this respect.

Because the trainers had practiced making presentations, and had received feedback on their performance during the training of trainers program, they knew what they were doing when it came to running training courses themselves. They showed self-confidence and competence while delivering information to the participants. Their gestures were natural, even when maintaining eye contact which attracted the participants' attention and interest. Most of them also maintained a normal pace to facilitate learning, including allowing interruptions during the presentations for clarification or discussion of doubtful points. Two of the trainers were occasionally asked by participants to speak loudly and slowly. This feedback helped them to control their pace and voice and contributed to improving their skills in giving presentations. The trainers showed a certain degree of insecurity when using training aids such as the white board, flip charts and so on. However, the participants still considered them to be effective in using training materials.

Regarding physical factors, during the training of engineers in Penang the training room was located in a very noisy part of the training center and was not very appropriate for the use of the training equipment. However, because the trainers were feeling psychologically at ease, relaxed and comfortable, they were able to overcome these external influences and ensure that the participants' learning process was not affected by them.

In summary, this experience showed that psychological factors exert great influence on the trainers' behavior and the success of their presentations, besides helping them to deal with adverse physical factors which could affect their performance and the results of the training program.

Conducting Exercises and Group Discussions

There were three basic requirements for conducting group exercises and facilitating group discussion in the two training activities. The first was to involve the participants fully in the exercises by giving appropriate directions. The second was to monitor the participants' progress in order to help them to avoid misinterpretation, to control the time scheduled and to develop continuing motivation. The third requirement was to assist the participants in the process of forming groups to facilitate group discussion.

Directions as to how to perform the various exercises were introduced by the trainers, who explained the rationale for the activity, how the participants were going to work and what they should report afterwards. This promoted a high level of interest among the participants, who thus became accountable for the learning activity. The step-by-step directions explained how to present the expected results in order to demonstrate the extent to which related performance objectives had been accomplished. An example of a worksheet giving directions for a role-playing exercise is presented in Figure 15.

Figure 15. Worksheet for a role-playing exercise.

**DOES THE TEXT EMPHASIZE THE
ROLE OF THE ENGINEER AS A LEADER?**
(Playing the opposite role technique)

DIRECTIONS

PHASE I

1. Divide the participants into three small groups.
2. Group no. 1 will play the positive role. They will "defend" the text.
 - (a) The group will prove that this text emphasizes leadership skills for an engineer in irrigation system management.
 - (b) The group will prepare a presentation (using a flip chart) to *convince* the audience that this paper is the *best* one in this respect and that all the engineers should read it to be good Engineers/Leaders. The group can use all kinds of arguments, including their own experiences, concepts, assumptions, etc.
3. Group no. 2 will play the negative role. They will "prosecute" the text.
 - (a) The group will prove that this text does not mention at all the aspects on Leadership in the engineering profession and it is useless and ineffective.
 - (b) The group will prepare a presentation (using a flip chart) to convince the audience that this paper is the *worst* one in this respect and that the engineers should not pay any attention to it.
4. Group no. 3 will play the role of *Jury*.
 - (a) The group will study the text thoroughly in order to be able to judge it fairly.
 - (b) The group will examine the pros and cons of the facts raised by groups 1 and 2 during the presentation.
 - (c) Finally, they will vote for one or the other of the propositions based upon the credibility of the arguments presented which would convince them to take the decision.

The participants' satisfaction with the trainers' ability to provide clear directions was expressed in statements such as the following:

Very good program; directions were given very clearly and to the point that motivated one to work harder and systematically.

They made me gain understanding through efficient and effective guidance.

In general, the trainers were observed to monitor the participants very well, although one trainer in one of the courses gave this responsibility to his partner most of the time. Fortunately, this did not affect the progress or the climate of the training program because the IIMI training staff provided support and assistance to the trainer who was left alone with the participants. The trainer who showed lack of responsibility on these occasions was informed about the consequences that his behavior could have on the training results.

The presence of the other trainers was another strong point which contributed to the success of the two training programs. They worked as a team to follow up the participants' activities, demonstrating responsibility in responding to their needs and in maintaining a high level of interest and motivation during the individual and group exercises.

Various methods of forming groups were used by the trainers, though they tended to use a limited number of favored methods so as to encourage the participants to move quickly and avoid wasting time. Some participants were shy and inhibited when asked to approach others to form groups on their own. This influenced the trainers to take over this task most of the time.

Presenting the Results of Group Exercises

The presentation of the results of group exercises to the course participants as a whole was done in different ways depending on the nature of the exercise. The trainers had to take account of these differences and manage the presentation process in such a way that the ease and confidence of participants in presenting results would facilitate learning among the audience.

The presentation of results in accordance with prepared worksheets was easier for the trainers, and they demonstrated a high level of skill in managing special methods of reporting. Role-playing exercises, for example, required extensive analysis of feelings and attitudes during the reporting session. The trainers were sensitive enough to be able to help participants to obtain new insights, develop understanding and report these developments to the audience.

Most of the trainers showed a high level of competence when making interventions. They sometimes summarized or paraphrased the wording of presentations to clarify ideas or statements in order to make sure that the messages were correct and well-understood by both the trainers and the participants. During the first days of one event, one trainer made inappropriate interventions, presenting distorted conclusions in order to emphasize his own ideas and beliefs. However, he changed his behavior in

this respect after receiving feedback from the participants expressing their dissatisfaction with his style of intervention.

Facilitating the Evaluation of the Training Program

Four kinds of evaluation were developed and applied during the two training programs. These were: process evaluation; integrated process and program evaluation; content evaluation; and program evaluation.

Process evaluation

This includes both self-evaluation by the participants of their own process of development during the training, and their observations on the process of development of the group as a whole. A self-assessment form, comprising fourteen statements to be assessed on a rating scale from 1 (very low) to 10 (very high), was used to record the participants' views and feelings about their own level of development. An example of the results of a completed self-assessment done by the engineers is presented in Figure 16.

A group process evaluation form was used to record the participants' views on the level of participation of other group members during a role-playing exercise where they argued for and against the thesis of an IIMI publication, namely, *Farmer organization management: A reconsideration* (Groenfeldt 1985).

Integrated process and program evaluation

Another evaluation form, comprising five major points, was used at the end of each week to obtain feedback from participants on the program in general and on their views and feelings about their own development during the week. Since each training program lasted for two weeks, each participant had an opportunity of completing this form twice. This form included questions relating to:

- * The most impactful experience in relation to learning;
- * The learning process this week was most inhibited or interrupted by: ...
- * The part of my experience this week that I feel most unclear/confused about;
- * Feedback related to:
 - training and trainer styles, etc.
 - structured experience through worksheet directions
 - person/system integration
 - present group of participants

Figure 16. Process evaluation. Self-assessment form.

TRAINING OF ENGINEERS ON MANAGEMENT OF IRRIGATION SYSTEM		
<u>SELF-ASSESSMENT FORM</u>		
13 - 26 November 1991, Penang		
DIRECTIVES		
Think about yourself and assess your behavioral changes (if any) during this two-week course. Please check in the scale from 1 to 10 where you were two weeks ago, and where you see yourself today. (Scale 1 - very low 10 - very high)		
<u>Questions</u>	<u>Was</u>	<u>Today</u>
1. My knowledge on how to be a good leader.	5.18	8.18
2. My feelings of being a good leader.	5.73	7.91
3. My knowledge of myself; who I am, how I think, what I like and dislike, etc.	6.18	7.55
4. My feelings and attention to farmers, to my staff, to my peers, superiors and people in general.	6.10	8.3
5. My interest in motivating myself and motivating farmers, my staff and peers.	6.18	8.45
6. My knowledge on how to motivate farmers, my staff, peers, etc.	5.00	8.18
7. My patience in listening to farmers, my staff, my peers, etc.	5.73	7.91
8. My wish to understand and deal with conflict among farmers and my subordinates.	5.45	8.00
9. My self-confidence and belief that I am capable enough to help farmers to understand and accept my advice to improve their lives.	5.55	7.73
10. My belief that I am able to change my own behaviour to be happier in my family, in my job, among farmers and my staff.	6.00	8.09
11. My self-confidence in my skills (knowledge, understanding, attitudes and feelings) to convince farmers, my staff and peers that they can be happier in life if they know themselves and know how to communicate with others, i.e., farmers	5.27	7.45
12. My belief that myself, my peers, my staff, my superiors are responsible for DID's success in Malaysia: belief that I am with DID and DID's success or failure depend on me, my peers, my staff, my superiors' effort, knowledge and attitudes	6.82	8.45
13. My belief that I am capable enough to improve DID's services to farmers and Malaysian communities by being a committed leader, effective coordinator, good motivator, believer, and hardworker.	6.45	8.45
14. My feelings about this course and its usefulness to my work, my relationship with my staff, farmers, etc.	4.73	8.36
Average for 14 questions	5.74	8.08

- materials
- facilitators
- myself -- about how I am or am not supporting my own learning process; and
- * To what extent would I like to see changes within myself so that my learning would be better supported?

Most participants gave one or two responses to each item. These responses were collated, discussed in general terms, and distributed among the participants. Feedback which could improve the ongoing program was taken into consideration and implemented by the trainers immediately.

Examples of some of the responses received from engineers during this process are presented below.

- * The most impactful experience during the first week of the training program was:

Learning to recognize myself better and learning how to communicate properly, especially at home where a small revolution may be necessary!

Learning to express my self-concept to my partners.
- * My learning process this week was most inhibited or interrupted by:

Noise of the traffic. Hopefully for the next course, the organizers could find a quiet place, but close to the town.
- * Feedback to the trainers:

To Mr A: Voice is very clear and shows self-confidence; easily understood and good communication skills.

To Prof. B: Very experienced and knowledgeable.

To Mr C: His presentation was good. His voice was loud and clear.
- * Feedback to myself about how I am and how I am not supporting my own learning process:

I have to understand all the topics and try to make use of them when I am working.

The feedback session made me realize my own weaknesses. I will work towards their rectification.

* Feedback to the organizers:

I think next time, it would be better to welcome the participants to the course premises. Explain to them the layout of the premises like where the toilets are, where the phones are, how to get to town, and all the other basic needs before starting the courses.

* Feedback to program design:

Good plan giving advance notification of contents and training methodology; could be enhanced by putting in the actual date and facilitators' names.

* To what extent would I like to see changes within myself so that my learning would be better supported?

I should take an active part in discussions and voice out my views without feeling shy.

Spend time to digest the notes and apply the knowledge to my work situation.

Content evaluation

Pretests and post-tests were designed to evaluate the level of learning that the participants had attained before and after major content sessions of the course. The participants were asked to respond to a series of multiple-choice questions, without signing them, at the beginning and end of some sessions, as follows:

- * The first pretest (or post-test), composed of twenty questions, covered the content of the entire program;
- * The second pretest (or post-test), composed of six questions, covered the contents related to interagency coordination; and
- * The third pretest (or post-test), composed of ten questions, covered the contents related to the Johari Window, transactional analysis, problem solving and motivation.

Although participants were not required to sign their responses, it was suggested that they use a private code or symbol to enable them to identify their own tests after they had been marked. While the facilitators did not need to be able to identify individual results, it was desirable that participants should know their own results and so be able to monitor their own development. The facilitators corrected the tests, calculated the group average and prepared a bar chart to compare the results of the pretests and post-tests in graphic form. The corrected tests were left for the participants to identify their own and keep them for their own records.

An example of the increase in knowledge and awareness experienced by most group participants is given in Figure 17, which shows the difference between the overall pre- and post-test results recorded by one group of overseers. In the pretest, the scores achieved by individual members of the group ranged from 35 to 71, with a median score of 51. In the post-test, the lowest score was 42, the highest, 83, and the median, 65. The chart clearly shows that increased learning took place among the participants in this session, which produced results typical of other groups.

Program evaluation

This evaluation was carried out at the end of the program with the aim of obtaining the participants' views on: the achievement of the training objectives; the orientation, interest, motivation, participation and productivity of the group; physical arrangements and comfort; and the strong and weak points of the program in general, with suggestions for improvement.

Overall, the irrigation overseers tended to evaluate the achievement of training objectives slightly higher than the engineers. The engineers evaluated the accomplishment of objectives relating to the qualities and functions of irrigation managers and the needs for personal and interpersonal development highest, while the overseers considered the highest level of accomplishment to be in relation to the development of interactive skills to facilitate relationships with staff and farmers.

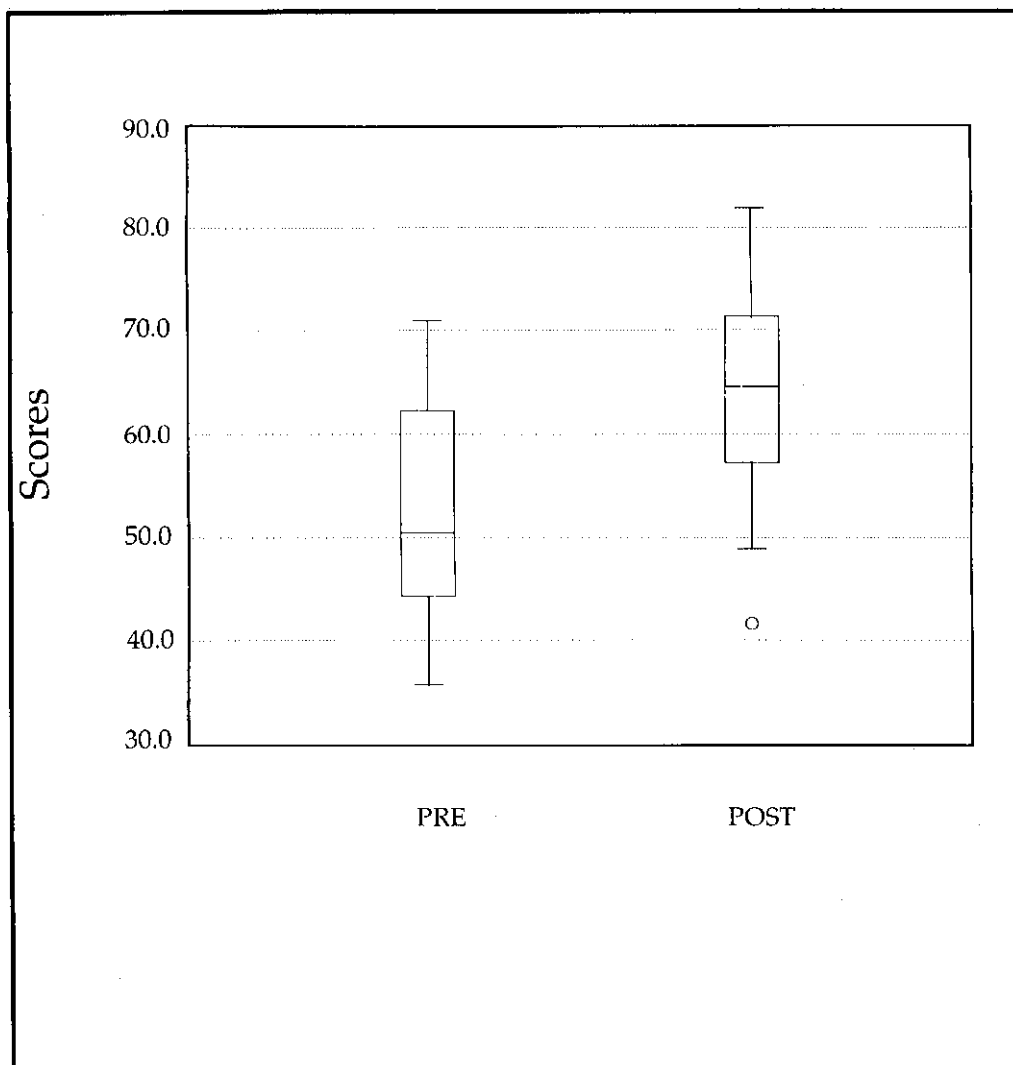
In evaluating the objectives related to personal and interpersonal development, the engineers considered that the objectives related to working with people in the field were not achieved so well as the objectives related to other topics, while the irrigation overseers were highly satisfied with them. The participants' evaluation of specific objectives therefore appeared to depend upon the extent to which they needed to use these skills in their jobs.

The sessions dealing with the management of information systems were poorly evaluated by the engineers. The presentation of this topic was felt by one participant to be not clear enough for a total newcomer, while another thought that exercises showing the use of management information systems in decision making should be introduced.

Regarding the strong points of the two programs in general, the engineers and irrigation overseers emphasized the good training materials provided, the capabilities of the Malaysian facilitators, their hardworking attitudes and their ability in conducting the exercises. They considered that the training provided a good opportunity for self-analysis, leading to greater awareness and better understanding of the message delivered. As far as the weak points were concerned, both groups thought there had been too many exercises each day. The program was too intensive and the period slightly too long.

Suggestions for improving the exercise included the separation of management information systems into a separate course, the provision of texts in Bahasa Malaysia, and the appointment of more trainers so that more staff members could participate in the training.

Figure 17. Content evaluation. Pretest and post-test results: Irrigation overseers.



Summary:

	Pretest	Post-test
Mean	52.91%	64.83%
Median	50.50%	65.00%
75th Percentile	62.50%	71.00%
25th Percentile	44.50%	57.00%

The edges of the boxes show 75th and 25th percentiles; and the middle lines inside the boxes are the medians.

Planning the Return of Participants to the Job

A training activity does not end when the actual training sessions are over; trainees need to apply the lessons they learned in their work environment, and this activity needs to be monitored and evaluated to ensure the long-term effectiveness of the training.

An important element of both programs was the preparation by each participant of a series of action plans for implementing different aspects of their new learning in the work environment. For example, with regard to the topic of motivation, participants were asked to consider the topic, "What can I do to be self-motivated and to motivate others?." They were asked to work in pairs to develop an action plan for this topic, based on the following outline:

- * Define objectives of the plan;
- * Identify the target group for the action;
- * Specify methods to be used to motivate the target group;
- * Decide how to communicate the plan to the target group;
- * Decide when the plan will be implemented and what its duration will be;
- * Prepare a schedule for follow-up and evaluation; and
- * Describe anticipated results of the plan.

The participants stated that this exercise helped them to think about how and why appropriate actions should be implemented step-by-step, as well as how to identify the desired results. Both groups of participants evaluated this exercise highly.

Another action plan exercise was concerned with the means of improving interagency coordination. The outline for this action plan (Kampfraath 1991) was as follows:

- * Clearly describe the activities to be coordinated;
- * Establish the goals of coordination;
- * Name the agencies concerned and their respective roles;
- * Indicate the areas identified for joint action and responsibility;
- * Identify the budgetary provision and constraints; and
- * Identify any administrative problems.

The results of this exercise were presented and discussed in plenary.

EVALUATING THE PARTICIPANTS IN THE TRAINING PROGRAMS

The participants in these two training activities were eleven engineers and twelve irrigation overseers. Both groups were composed of professionals of different ages and experiences. However, in general, they were very interested in learning and showing willingness to build a good team and participate actively. They were also very supportive to the trainers and facilitated the process of learning. In general, they were punctual. Both groups were lodged in the same training centers in Kota Bharu and Penang.

EVALUATING THE TRAINING MATERIALS

The evaluation of the training materials was concerned with the extent to which the training programs made use of the materials to fulfill the needs of participants and the organization. Both training programs used the training modules produced specifically for those events. The performance objectives for the day and the respective materials were announced and distributed every morning. The training materials were considered to be very useful and to have greatly facilitated the learning process.

EVALUATING THE TRAINING ENVIRONMENT

The environment of the training sessions included both the physical environment, such as the training facilities, tables, chairs, room temperature, and so on, and the psychological environment, which affects the climate of learning.

In general, the physical environment was considered to be acceptable. However, some improvements were suggested, such as a less noisy location (suggested by the engineers). The psychological environment was considered to be excellent; participants expressed a high level of satisfaction in this respect.

CONCLUSION

The results of monitoring the training carried out by the Malaysian trainers confirmed to IIMI that its involvement in the whole training cycle at DID had been very worthwhile. The trainers showed themselves capable of applying training methods and techniques with confidence, were highly motivated and transmitted their enthusiasm to the participants; and the training modules were being used effectively. The experience as a whole emphasized the importance of a well-designed training plan in providing the basis for effective and sustainable training activities.

The monitoring process emphasized the importance of a well-designed training plan as the basis for effective and sustainable training activities.

PART IV

THE ROLE OF TOP MANAGEMENT IN INSTITUTIONAL DEVELOPMENT

ONE OF THE most important and far-reaching aspects of the implementation of the training cycle at DID was the involvement of top management, first, in the TNA itself, and second, in a process of institutional development designed to ensure that the results of the training programs led to real and lasting improvements in the management of the organization.

Part IV of the book is concerned with these issues. Chapter 13 describes how top managers were involved in the TNA, primarily to make them aware of the importance of such an exercise, which would provide a great opportunity for them to analyze irrigation jobs at DID and the skills necessary to manage irrigation schemes effectively. The TNA exercise also enabled them to share the experience of DID and its constraints and discuss possible ways to overcome them.

Chapter 14 deals with the topic of strategic planning and human resources development, and describes how top managers in DID were brought together to discuss strategic planning issues, including the mission statement, objectives, strategies, activities and performance standards and indicators for DID.

Chapter 15 describes the further development of strategic planning and human resources development at field level in the Besut and Kerian irrigation schemes.

CHAPTER 13

Involving Top Management in the Training Cycle

INTRODUCTION

TO BE SUCCESSFUL, management training and development for improving any organization must have support from the top management, who must devote sufficient time and effort to participate in it. Key conditions must exist before initiating management training and development in any organization, as the outputs are mainly changes in the behavior of individuals and groups within the organization, and of the organization as a whole.

One of these conditions is that top managers must understand and participate in all phases of the management training and development program, which aims to bring about these behavioral changes through a range of training activities and other interventions to overcome constraints identified during the TNA. It is unrealistic to expect top managers and managers at other levels to make decisions and support new activities and behaviors within the organization if they are not aware of the kind of training program that is going on or why their staff are behaving in different ways and proposing different approaches to their jobs.

Top managers must understand and participate in all phases of the management training and development program.

Successful management training and development requires that managers of the organization recognize the need for improving competence and performance of both the individual and the organization. It also demands that top managers be completely committed to implementing the whole training program in order to ensure successful changes. The systematic follow-up and evaluation required to ensure the improvement of the training program must be led by line management -- preferably, by top management. The program is most likely to be successful if it is recognized by top management as the first priority and is viewed as such by the staff of the organization.

At DID, the top managers supported the proposals for developing the training cycle, which includes improving personnel capabilities and overcoming organizational constraints. The continuous assistance and participation of nineteen directors and senior staff, including the Director General and his deputy, during the first TNA exercise proved that the organization was ready for a successful improvement effort.

The TNA began with a special meeting for the top management group, that had an experiential learning session of the TNA exercise. This group received special treatment during this exercise and was nominated as a resource group.

OBJECTIVES OF THE TOP MANAGEMENT SESSION

This session was designed to provide an opportunity for DID top management to participate in the TNA exercise through an experiential learning process. This aimed to:

- * Discuss lessons learned from the practical work experience of top management, to provide insights for analyzing the needs of DID for both training and non-training programs;
- * Provide top managers with the opportunity of experiencing and evaluating the methodology of the TNA exercise which some 300 members of their staff would experience during a period of about one month;
- * Facilitate awareness of the kind of content which would be discussed during the TNA exercise and the information which was expected to be obtained from it; and
- * Develop understanding and commitment among top managers to support the entire cycle of the management training and organizational development programs.

METHODOLOGY

The session for top managers was conducted broadly in accordance with the methodology applied in the main TNA sessions for the five core staff categories and the researchers and trainers. However, the methodology was slightly modified for the top managers, who were considered as a resource group. The session was conducted using group techniques to facilitate interaction and participation.

The activities carried out during this session were as follows:

- * A "getting to know each other" exercise;

- * Presentation and discussion of the Analytical Framework for Irrigation Management;
- * Identification of current standards of performance and competence;
- * Job and task analysis;
- * Identification, discussion, and listing of managerial knowledge, attitudes and skills using a brainstorming technique to facilitate participation;
- * Identification of organizational constraints; and
- * Evaluation of the TNA session by the participants.

The subject of job and task analysis was treated more extensively for this group than for the other groups in the TNA exercise.

PRESENTATION OF THE ANALYTICAL FRAMEWORK FOR IRRIGATION MANAGEMENT

The Analytical Framework for Irrigation Management was presented and discussed. The discussion aimed to translate the general management decision-making processes which occur in all kinds of organizations into processes specific to the management of irrigation systems. The framework considers decision making to be a major factor in determining the performance of irrigation systems.

The discussion provided an opportunity for the DID managers to reflect on the technical and managerial dimensions and interrelationships of irrigation jobs and on the importance of improving managerial capacity among professionals in irrigation to meet the needs of a new organization and the country. Questions related to management organization were discussed, including decision-making processes, information flows and control processes, management of coordination, people, and so on.

This session was considered relevant by the participants because it provided for increasing understanding of the concept of irrigation management and its managerial and technical aspects.

IDENTIFICATION OF CURRENT STANDARDS OF PERFORMANCE AND COMPETENCE

The participants were divided into seven groups and asked to identify the performance requirements and the related competencies of the DID personnel working with them. Examples of the kinds of performance standards which could be used in irrigation

systems were presented to aid their discussions. The participants also identified the kinds of competence which are needed by irrigation professionals. There were considerable differences in the outputs. While one group indicated performance requirements in terms of managerial activities and the related competencies, others described them in more narrow terms.

Performance concepts and performance issues did not draw the expected level of attention, although it is generally accepted that it is important for managers and staff of irrigation departments to have performance targets to guide them. These targets should be as specific as possible and should include only factors over which they have some control. The level of performance or competence of personnel must be related to the organization's objectives and targets. Training programs should be designed to improve the skills which the organization needs in order to identify and develop performance and competence.

This discussion was not very successful. It seemed that DID had not established performance targets with which current actual performance could be compared. It was observed that there was a lack of performance targets in relation to both personnel and system performance.

JOB AND TASK ANALYSIS

Job analysis is the process of compiling, recording and interpreting the duties and tasks which together make up an individual's job. The main aim of this session was to help the participants analyze their own jobs, distinguish between the managerial and technical duties and tasks involved, and develop a better understanding and awareness of the skills needed to perform these activities successfully.

The job analysis done by the top managers involved a systematic examination of the actual duties and tasks performed by various categories of DID staff, in order to distinguish between their technical and managerial aspects and identify the knowledge, attitudes and skills required to perform them.

The job analysis was done using the *Format for self-analysis of irrigation jobs*. The participants were divided into seven groups to discuss and respond to questions on the technical and managerial aspects of job involvement, including the assessment component, opportunities for improvement and others. The separation of technical and managerial aspects, however, was less clear in this session than in those involving other categories of staff. This was demonstrated by the fact that such topics as budgeting, understanding of contract documents and specification of designs, securing necessary funds and emergency measures were identified by some groups as managerial tasks.

The only methods of assessing managerial performance identified by participants were feedback and the level of complaints and compliments. Opportunities for improving job performance included continuous training, enhancement of existing monitoring systems and learning new management techniques.

MANAGERIAL KNOWLEDGE AND ATTITUDES

This session aimed to interpret the various categories of irrigation jobs in DID in terms of the managerial knowledge and attitudes required to perform them satisfactorily. The jobs, duties and tasks were analyzed by the participants and translated into knowledge and attitudes. Using the brainstorming technique, participants listed as many elements of managerial knowledge and related attitudes as they could think of, based on the job analysis carried out in the previous session. The lists of elements of managerial knowledge and attitudes compiled during the brainstorming session were then discussed in detail in a plenary session.

This exercise helped to increase awareness of the importance of developing managerial skills among professionals in irrigation. This session was long enough to facilitate deep discussion on the issues of managerial knowledge and related attitudes. The results of the exercise group were consolidated under the major aspects of managerial knowledge and attitudes.

Some of the items of managerial knowledge and attitudes resulting from the brainstorming session are presented below.

MANAGERIAL KNOWLEDGE

How to interact

- * How to interact with farming communities and understand the behavior of farmers.
- * Coordination and interaction with agencies.

How to manage human resources

- * Training of farmers.
- * Leadership.

Planning, monitoring and evaluation

- * Decision-making process.
- * Problem solving.

How to use criteria and set priorities

- * Budgetary allocation.
- * Priorities of maintenance plan.

How to manage information

- * Information process.
- * Communication systems, mass media communication.

MANAGERIAL ATTITUDES

How to stimulate communication

- * Patience.
- * Open-mindedness.
- * Being a good listener.

How to build up confidence

- * Assertiveness.
- * Responsiveness.

How to motivate others

- * Warmth.
- * Ability to influence staff.

How to improve oneself (self-improvement)

- * Dedication.
- * Interest.

How to direct and control

- * Responsibility.
- * Discretion.

IDENTIFICATION OF ORGANIZATIONAL CONSTRAINTS

The discussion of DID organizational constraints during this session was less systematic than during the sessions for other groups of participants. The top managers were able to discuss this issue in small groups during the job and task analysis and during the brainstorming session, while they were translating duties and tasks into managerial knowledge and attitudes. Unfortunately, there was no opportunity to list the constraints as was done during other sessions. Among technical constraints identified in the responses on job analysis, the top managers included: lack of expertise and funds; inefficiency of structures; lack of training facilities and insufficient relevant data and managerial constraints; lack of funds and staff; inadequacies in the existing management structure; and lack of dedication to work.

EVALUATION OF THE TOP MANAGEMENT SESSION

At the end of the top management session, which took place at the beginning of the TNA exercise, the participants were invited to evaluate the exercise in terms of: the level of achievement of the objectives defined and shared with them; the level of satisfaction in terms of group atmosphere, interest and motivation, participation, productivity; and physical arrangements and comfort. They also evaluated the strong and weak points of the workshop and provided suggestions for its improvement.

On a scale from 1 (low, objectives not achieved) to 5 (high, objectives achieved very well), the participants in general considered that the objectives of this session had been well achieved. The level of satisfaction with the session was also high. Some participants felt that the analysis of job requirements had been very useful and had well understood the difference between the technical and managerial aspects of irrigation activities. They recognized the difficulty which irrigation engineers have in understanding management concepts, but felt that the session had contributed to reducing such misunderstandings among DID personnel.

CONCLUSION

The participation of top management in the first workshop of the TNA was vital for the success of the rest of the TNA exercise and the whole training program at DID. It was this first exercise which brought the top management together to discuss the concept of management in irrigation and helped them to realize that the management training program which was then beginning was going to make an important contribution to the development of DID. The top managers therefore welcomed the program and believed in it.

When the strategic training cycle was presented, the top managers understood that the TNA workshop was only the starting point in a long and complex process, which would culminate in the discussions on strategic planning and human resources development which are described in Chapter 14.

The participation of top management was vital for the success of the whole training program.

CHAPTER 14

Strategic Planning and Human Resources Development

INTRODUCTION

THE DECISION TO discuss the question of strategic planning and the formulation of a human resources development plan for DID arose from the need to evaluate the results of the training activities described above. The performance of trainees on the job can only be assessed in terms of how effective they are in helping the organization to achieve its objectives. These objectives should be defined within the framework of an overall mission statement defining the general goals of the organization.

It was agreed that, in order to ensure that the effort put into the training activities would achieve lasting results, top managers of DID should be brought together to discuss strategic planning issues, including the formulation of a mission statement and the identification of objectives, strategies, activities and performance standards and indicators. In preparation for these discussions a group of top managers prepared a mission statement, objectives, etc. The aim of the discussions was to evaluate this preliminary proposal and to further practice the skills of formulating objectives and strategies for DID.

An essential element of the strategic planning process is the formulation of a human resources development plan to ensure the provision of activities to develop personnel and provide assistance to their well-being within the organization.

An essential element of the strategic planning process is the formulation of a human resources development plan.

In view of the importance of the training program within the overall human resources development plan, it was agreed by DID and IIMI that this subject should form a major element of the discussion of the strategic planning issues by the DID top management. A human resources development plan includes both a systematic training program and a performance evaluation system, both of which require clear and transparent performance indicators to measure improvements in job performance resulting from the implementation of the training program.

Three workshops were organized and held from 15 to 25 October, 1991 at DID Headquarters. The active participation of policymakers and senior managers in these activities was a key factor in developing their commitment to the organizational review and planning process, besides motivating and inspiring their staff to work towards the fulfillment of DID's mission and objectives. These activities were organized in two sessions of three days each and one one-day session, with a maximum of twenty participants in any one event. All the participants were exposed to organizational issues during these events, and some were also exposed to issues related to personal and interpersonal development, with the aim of promoting better communication between DID staff and farmers in Malaysia.

OBJECTIVES AND EXPECTATIONS

The general objective of these events was to sensitize DID policymakers and senior managers on the need to identify performance indicators which would enable DID and IIMI to evaluate the effectiveness and impact of the management training program in the organization, as part of the Human Resources Development Plan. The specific objectives for each event were defined in accordance with the role of the participants within DID.

The first event, which lasted for three days, was designed for the policymakers or top managers of DID. The participants included the Director General, the Deputy Director General, Directors of States and others involved in defining policies and procedures for the organization. The specific objectives of the event were to:

- * Review the DID mission statement and its philosophy;
- * Practice the skills of formulating key objectives, strategies and activities for top management to achieve the DID mission;
- * Discuss performance categories and standards for DID;
- * Practice the skills of formulating performance indicators to evaluate staff performance;
- * Discuss the role of the manager-leader within the organization; and
- * Discuss the concept of a Human Resources Development Plan as a part of strategic planning.

The second event took place during a one-day session. It was designed for Directors of States, Directors of Projects and Senior Engineers. The specific objectives were to:

- * Explore the concepts of integrated planning and management in relation to DID's mission;

- * Practice the skills of formulating a DID organizational objective for irrigation;
- * Practice the skills of formulating objectives, strategies and activities for individual directorates;
- * Discuss performance standards, monitoring and assessment; and
- * Present and discuss the Human Resources Development Plan as a key objective of strategic planning.

The third event in this group lasted for three days and was designed for Directors of States, Directors of DID technical branches and Directors of Districts. The specific objectives for the first day were the same as those for the one-day event, outlined above. The objectives for the remaining two days were to:

- * Discuss the role and personal qualities of a manager-leader;
- * Discuss issues related to personal and interpersonal development;
- * Discuss and exercise the skills needed to make good irrigation managers into good communicators;
- * Discuss and analyze interpersonal style through the application of the Johari Window and transactional analysis theories (Biddle 1980);
- * Discuss and carry out an exercise on how to influence and motivate others; and
- * Discuss and carry out an exercise on how to give and receive feedback.

Each event began with an interactive exercise in which participants were asked to state what they expected to achieve through participating in the activity. The participants' expectations included the following:

- * To discuss how DID could really develop its human resources;
- * To learn how to bring an institution to a high level of productivity;
- * To learn how to design a strategic plan for the water resources sector;
- * To discuss how to make use of collaborative research and implement it in the field to attain the expected results;
- * To find out how management principles could be applied in the irrigation sector;
- * To obtain a good orientation to help DID to improve irrigation performance;
- * To learn about activities which compose the Human Resources Development Plan;

- * To ultimately obtain written procedures for training;
- * To obtain information for designing a manual to facilitate communication with staff and develop better interaction; and
- * To influence managers to conduct round-table discussions for all levels of staff.

The following sections consolidate the discussions and results of all three workshops.

STRATEGIC ISSUES IN IMPROVING IRRIGATION MANAGEMENT

In each workshop, some strategic issues in improving irrigation management were introduced and discussed in order to orient the participants towards the objectives of the workshop (Constable 1991a).

The first issue was that of performance monitoring, which should be seen in the context of an integrated policy planning, management and monitoring process in which management performance should be evaluated in terms of the results achieved in relation to explicit policy objectives, rather than in terms of universal comparative performance indicators. The second issue was related to the Delft Declaration issued by the United Nations Development Programme (UNDP) Symposium held in Delft, the Netherlands in June 1991, which emphasized the need for unified policy approaches involving the entire water sector and capacity building at sectoral, institutional and individual levels. The third main issue was the conceptual approach of the work programs of the International Commission on Irrigation and Drainage (ICID) in relation to irrigation management in the context of sustainable management, including national resources of land and water and the associated ecosystems; irrigation and drainage infrastructure and responsible management agencies; farm production infrastructure; and the farmers.

It was emphasized that irrigation agencies should embrace an integrated strategic policy planning and management process, be consumer-oriented and adopt commercial attitudes in carrying out their activities.

The conclusions reached with regard to these issues included the following:

- * To improve irrigation management, it is necessary to design a framework which should take into account a systematic, integrated policy planning, management and monitoring process;
- * Management performance, as part of this framework, should be monitored and evaluated in terms of the results achieved in relation to explicit objectives, for the irrigation and drainage infrastructure and management institutions, and for the farm production infrastructure; and
- * The objectives should be reasonably set (challenging but achievable).

STRATEGIC PLANNING AND THE MANAGEMENT PROCESS

One of the questions posed in the discussions on this topic was: "why do we need an organization?." It was noted that an organization is not an end in itself, but is established to achieve some objective or purpose, and to conduct a business. Arising from this, the next question was, "is irrigation supply a business?." Discussion of this question helped to increase the participants' awareness of the concept of irrigation supply as a business which has assets, has owners or shareholders, sells a product, uses resources and spends or collects money, and so requires an organizational structure and management.

The components of an organizational structure were presented and discussed by the participants who also realized the need for developing team effort towards a common end.

A MISSION STATEMENT FOR DID

The following mission statement had been prepared by DID management:

Mission statement of the Department of Irrigation and Drainage

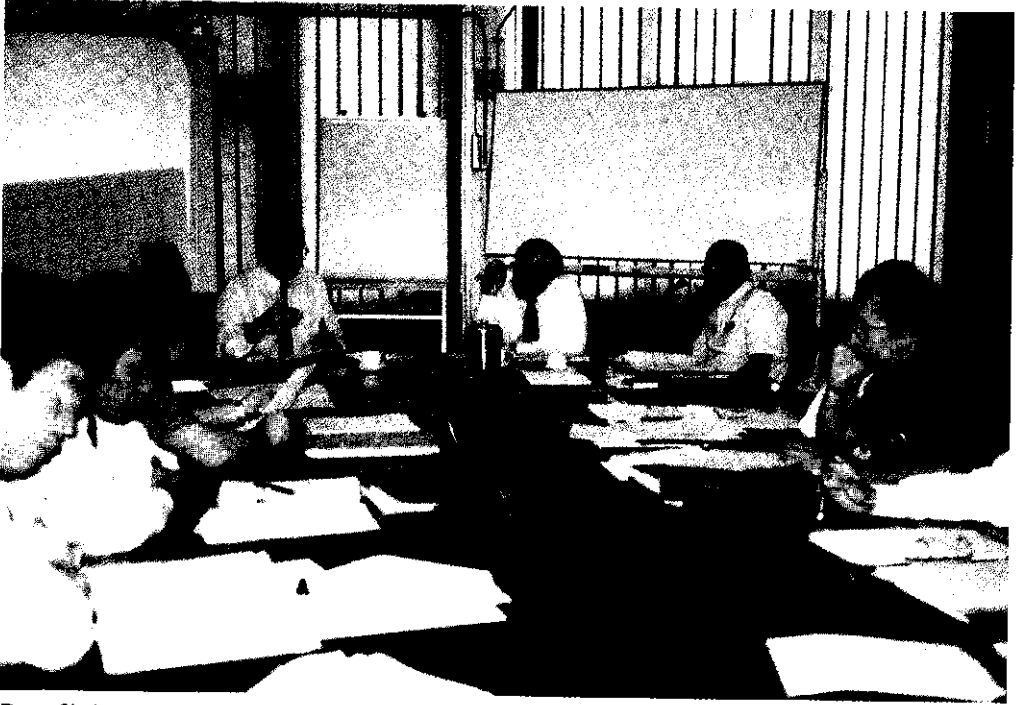
To provide quality, efficient, effective service through planning, implementation and management of works, facilities in the field of irrigation, drainage, river engineering, coastal engineering, and to interact with related agencies and the public in order to achieve sustainable national development.

In discussing this statement, it was pointed out that it should define not only the mission of DID within the general framework of the mission and objectives of the Ministry of Agriculture, but also in relation to the overall government policy for water resources development in the country. It was further stressed that a mission statement should not contain aspects of strategy which are best covered separately by way of a mission interpretation.

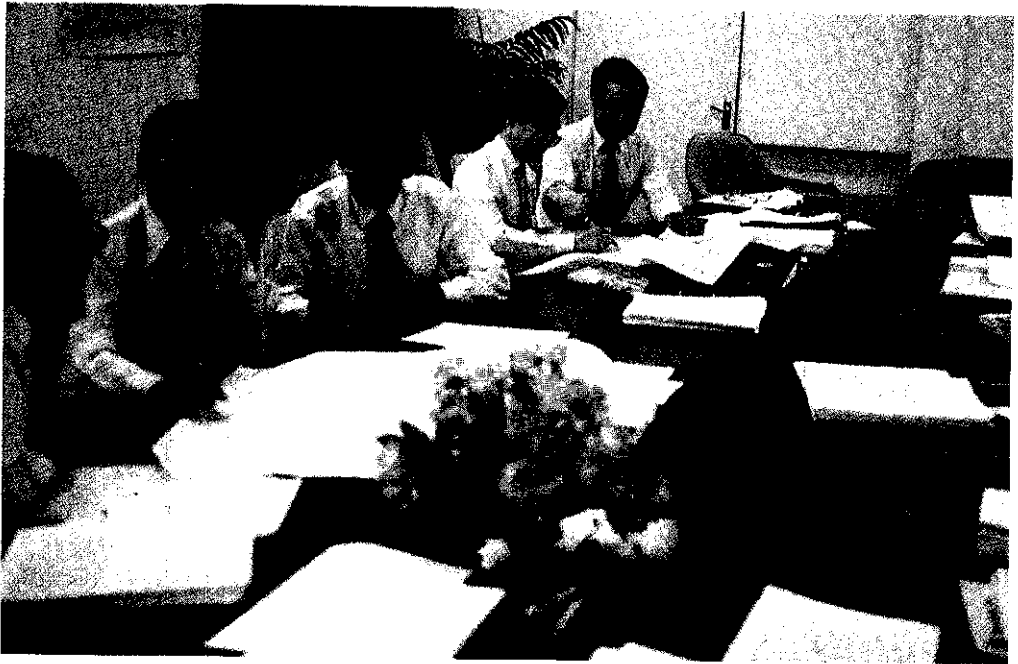
The ideal mission statement should be clear and should reach out to people and require little or no explanation. The mission of DID, for example, might be interpreted in the following terms:

In the performance of its mission DID will:

- * Develop its programs and activities in accordance with the government's economic, financial, social and environmental policies;
- * Cooperate with other relevant agencies of the government and develop coordinated policies and programs for the sustainable development and management of Malaysia's water resources;



Dato Shahrizaila bin Abdullah, Director General of DID, participating in the workshop on Strategic Planning and Human Resources Development (HRD) for DID.



The DID top management discussing issues related to Strategic Planning and HRD for DID.

- * Adopt planning and management processes which will ensure that DID remains responsive to its clients' needs and delivers its services in a cost-effective manner; and
- * Maintain an organizational environment which will encourage staff participation in the achievement of DID's objective and provide opportunities for the continuing development of their skills.

In summary, the interpretation of the mission should aim to ensure that DID, in performing its mission, will support government policies, recognize the need for cooperating and coordinating water resources in the country, meet the clients' needs and ensure staff participation and staff development.

The DID mission statement and its interpretation should then be disseminated to key groups that are closely related to the organization, including DID staff and clients, policymakers in the government, and stakeholders. This may be done through various mechanisms such as seminars, charts, audiovisual aids, and so on. However, it was suggested that a brochure would be an appropriate instrument for such a communication. It should contain the government vision, objectives for water, agriculture and the environment, the DID mission statement and its interpretation, and a distribution list of those concerned with DID's activities.

OBJECTIVES, STRATEGIES AND ACTIVITIES OF DID

This session aimed to encourage the participants to translate the DID mission statement into organizational objectives, together with appropriate strategies and activities to achieve the objectives. Three major components which should be part of the broad long-term objectives for any agency managing the irrigation infrastructure were identified, as follows:

- * To operate the system to provide farmers' water requirements in accordance with agreed, approved or negotiated levels of service;
- * To maintain the system in satisfactory operational condition in perpetuity, in conformance with the original design or approved design modifications; and
- * To manage the system so as to provide these levels of service at minimum achievable cost.

A hierarchy of objectives was necessary in corporate or strategic planning. To help prepare participants for the task of defining objectives, strategies and activities in relation to their own areas of responsibility, the key terms were defined as follows (Constable 1991b):

OBJECTIVE

A statement reflecting values or desired outcomes related to a vision of the future. Objectives are hierarchical in order, broad in scope at the top level and specific and detailed at the action level.

STRATEGY

A line of action and key priorities established to achieve an agreed objective.

PLANS, PROGRAMS, BUDGETS

A set of detailed activities to be implemented in accordance with the agreed strategy.

The participants were divided into small groups to consider the mission statement and the general environment in which DID will be operating in the future and to define DID's organizational objectives for irrigation. The results from each group were then presented to the meeting as a whole. The objectives proposed by the various groups included the following:

- * To make available the required water supply for the irrigated agriculture sector in line with the National Agriculture Policy;
- * To raise the quality of agricultural produce and ensure continuity of supply;
- * To ensure effective and efficient use of water resources through operation and maintenance of irrigation systems;
- * To ensure equitable water distribution and allocation to the project farmers;
- * To conserve the environment and the ecology;
- * To provide and manage irrigation, drainage and access facilities for the cultivation of (food) crops and increasing the farm-income of farmers;
- * To provide the necessary support to develop and manage water resources and distribute the required quantity of water at the required time to promote the optimum cultivation of agricultural crops;
- * To provide an efficient, effective and quality supply of irrigation water;
- * To provide efficient, effective and quality farm access and other engineering support services;
- * To provide irrigation infrastructure, sustainable over the life of a project; and
- * To provide durable, cost-effective and aesthetically designed irrigated infrastructure.

The group objectives were then analyzed by the meeting as a whole. Some of the objectives were considered to be so broadly defined that they covered areas which should be the responsibility of the Ministry of Agriculture. Others included strategy as well as objectives, while still others were felt to need further explanation because the terms used were not self-explanatory. It was suggested that an organizational objective should be accompanied by specific proposals for action to achieve the desired results, while at the same time it should have a vision and reflect what the government wants DID to do.

The results of the discussions were taken into account in the preparation of a proposed organizational objective for DID which would provide a basis for the participants to prepare key objectives for their own units, along with appropriate strategies and activities. This objective was discussed and modified by the participants until a final text, as an example of the DID organizational objective for irrigation, was agreed upon as follows:

To focus on the essential activities involved in the fulfillment of its mission, DID has adopted the following objectives for irrigation:

To provide and manage the necessary resources and infrastructure so as to: (i) maintain/improve productivity of farmers, and (ii) facilitate the development of commercially viable farms.

The participants were then divided into groups according to their areas of responsibility to define the key objectives, strategies and activities for these areas, as follows:

Directorate;

Functional branches;

State-level;

Project-level; and

Training.

Examples of the statements produced by the various groups are presented below:

DIRECTORATE

Objectives: To implement related government policies on irrigated crop production.

To ensure efficiency and cost-effectiveness in program implementation.

Strategies: Develop database on irrigation. Develop manpower.

Activities: Monitor and evaluate the implementation of programs. Ensure adequate training programs.

FUNCTIONAL BRANCHES

Objective: To plan, design and implement irrigation, drainage and other engineering works in accordance with departmental development programs and guidelines.

Strategies: Undertake feasibility studies.

Undertake detailed design.

Activities: Surveys and investigations.

Planning and detailed design, and land acquisition.

STATE LEVEL

Objectives: To provide/maintain/improve the necessary infrastructure for efficient water supply to the farm.

To provide irrigation extension service to commercial farming.

Strategies: Implement efficient water management practices.

Provide competent irrigation extension service.

Activities: Plan and construct efficient infrastructure for irrigation projects. Work as a team with the farmers and with the irrigation extension personnel.

PROJECT-LEVEL

Objective: To identify, plan and design irrigation projects, and monitor and evaluate irrigation programs to maintain/improve production.

Strategies: Establish database.

Capacity building.

Activities: Data collection and evaluation.

Formulate criteria and procedures for planning, design and management of an irrigation project.

TRAINING

Objective: To develop manpower (skill, professionalism) to support the organization in its provision and management of resources and infrastructure for irrigation.

Strategies: Identify/create training opportunities.
Facilitate on-the-job training of staff.

Activities: Selection of staff for training.
Staff evaluation and appraisal.

This exercise of translating the DID mission statement into irrigation objectives, strategies and activities for specific areas of responsibility was evaluated by the participants as one of the objectives of the program which was well-achieved. It was noted that the significance of this integrated strategic policy, planning and management process lies in the combination of top-down objectives and bottom-up responses to accomplish the organizational mission. This involves various forms of interaction which contribute to the development of understanding and knowledge about the organization, staff motivation and commitment towards the department.

PERFORMANCE ASSESSMENT IN DID

This session provided the participants with the opportunity of reflecting on performance issues, including performance categories, performance standards and performance indicators, and to define specific performance indicators to assess the extent to which the objectives of DID were achieved. The *Guidelines for institutional assessment of water and wastewater institutions* issued by the Water and Sanitation for Health Project (WASH) (WASH Technical Report No. 37) (Cullivan 1988) in February 1988 was used to facilitate the discussion and exercises during this session.

The importance of assessing the performance of an institution in order to discover its strengths and weaknesses, was emphasized, and the concept of performance categories was introduced as

a set of related skills, procedures and capabilities which define a particular area of institutional function or performance (Cullivan 1988).

The participants discussed nine performance categories of an institution (that is, aspects of an institution in respect of which performance can be measured) which had been identified in the course of field research carried out by WASH in Brazil and Malaysia, as follows:

1. Organizational autonomy;
2. Leadership;
3. Management and administration;
4. Commercial orientation;
5. Consumer orientation;
6. Technical capability;
7. Developing and maintaining staff;
8. Organizational culture; and
9. Interactions with key external institutions.

Five of these categories, namely, leadership, management and administration, commercial orientation, consumer orientation, and developing and maintaining staff, were selected for discussion in small groups. Participants were asked to analyze the specific performance indicators relating to each category which had been suggested by the WASH researchers. Performance indicators were defined in the WASH report as

a set of specific measurable behaviors or procedures related to a performance category which, when analyzed together, indicate the degree to which competency standards are met in a performance category (Cullivan 1988).

As a result of the discussion, the participants in each group presented a list of five indicators which they considered to be relevant in evaluating the DID performance in one of the five categories referred to above.

The group who analyzed the performance category of leadership, for example, suggested that the performance of a leader could be rated in accordance with the following indicators:

1. Provides a clear sense of mission; articulates the goals of the mission; involves people in the mission so that they get a sense of belonging to the mission; gets people excited about the mission, gets people to believe in it.
2. Serves as a positive role model (e.g., is honest, hardworking, enthusiastic; balances people's needs with organizational needs; believes in hard work; etc.).

3. Is active, has a "we can do it" attitude; makes decisions assertively, is able to move things.
4. Identifies clear performance standards and is strict but fair; gives positive and negative feedback where due; disciplines where necessary based on performance.
5. Sets a positive problem-solving environment (i.e., creates a sense that uncovering problems is desirable and that creative approaches to solving them are effective).

It was observed that there was an increased level of awareness among the participants of the performance indicators related to the five institutional categories referred to above, after this exercise.

Following the discussion on the WASH performance categories, participants were invited to identify performance indicators which would enable DID to evaluate the level of achievement of the objectives for different areas of responsibility which had been defined during the session on the DID objectives, strategies and activities, described above. One of the objectives defined for the state-level, for example, was:

- * To provide irrigation extension service to commercial farming.

The following performance indicators were identified for use in evaluating the extent to which this objective had been achieved:

- * Number of persons participating in implementing the program on the ground; and
- * Number of cases in which planting was not done on schedule.

One of the objectives defined for training was:

- * To develop manpower (skill, professionalism) to support the organization in its provision and management of resources and infrastructure for irrigation.

Performance indicators identified in relation to this objective included:

- * Evaluation of course by participants; and
- * Number of staff trained per year.

It was observed that participants tended to select technical and quantitative indicators and tended to overlook qualitative aspects. Questions which needed to be asked in this respect included, for example:

- * What does "good performance" mean?
- * If 80 percent of the land area is considered as an irrigated area, even though it is not very well irrigated, can we consider this to be "good performance?" and

- * How can we determine whether performance standard is very good or average or low?

It was noted that, whereas irrigation professionals used to measure the performance of irrigation systems against universal indicators and standards, these have now become system-specific. However, one can still consider the trends in performance indicators for one system, and compare them with the indicators for another one in order to assess their respective achievements and make conclusions on their performance.

Performance assessment which focuses on objectives, achievements and accomplishments can produce a true picture of an organization, showing its failures and successes and providing managers with a guide for designing appropriate interventions to improve the organization's results when necessary.

HUMAN RESOURCES DEVELOPMENT

The human resources development issue was presented and discussed as a process whereby the organization assesses its human resource needs in order to design a plan to satisfy these needs. Such a plan should outline the organization's approach to providing its staff with the opportunity of developing their personal and professional capabilities, besides providing physical support for them to perform well in order to accomplish the desired results. A publication of the World Bank and the United States Agency for International Development (USAID), entitled *Irrigation training in the public sector: Guidelines for preparing strategies and programs*, (Irrigation training 1989), provided the basis for discussing this issue. This publication emphasizes two specific objectives for systematic training programs. They are:

- * To ensure that the management, technical and administrative skills necessary to fulfill its charter and objectives are developed and retained within the firm or the department; and
- * To optimize the opportunity for personal development and work satisfaction among individual staff members.

In 1987, an ICID meeting in Morocco reached the following conclusions with regard to irrigation water management training programs:

- * Programs should be developed in line with the organizational objectives, based on the assessment of the needs for training;
- * They should be comprehensive and systematic to include the needs of management, operating, maintenance and administrative staff;
- * Initial training of project operating and maintenance staff should be completed before new works are commissioned;

- * Water users and their associations should be taken into consideration when developing training strategies; and
- * Training programs should be as close to the field as is possible (Irrigation training 1989).

In addition, the strategic decisions in planning for training recommended by the above guidelines were introduced and analyzed in terms of the extent to which they had been applied in the management training program of DID and IIMI, as follows:

- * The objective, targets or goals: the corporate mission statement;
- * The functions and tasks to be performed by management and staff, consistent with agriculture sector policies and structures;
- * The relative priority of tasks, including coordination with other agencies and users;
- * The specification of requirements for training;
- * The organization and implementation of the training program;
- * The budgeting for a training program, periodically to be reviewed; and
- * The follow-up, monitoring and evaluation of the training program (Irrigation training 1989).

Finally, the activities cited below were presented as additional ones which should be part of the human resources development plan:

- * Recruitment and selection;
- * Socialization;
- * Career development;
- * Individual performance management;
- * Compensation; and
- * Performance appraisal.

Individual performance management and some key factors for the success of a staff performance appraisal were also presented and discussed. These included issues related to: monetary and nonmonetary incentives; structuring a performance appraisal scheme according to the mission and objectives of the institution; training appraisers; developing appraisal techniques; and the use of indicators which are easy to identify.

Participants commented on a lack of interest in training programs among the DID staff. It was pointed out that, in order to improve this situation:

- * The training department should have support from the top management;
- * The organization should have a clear human resources development plan and the training program should be part of this plan;
- * Training should be planned far in advance and be disseminated among the departments, state districts, project units, etc., including the overall plan with objectives, training content, period of time, etc.;
- * This dissemination process should be done through a motivating letter sent to the heads of units, emphasizing why and to what kind of participants the program is useful and more relevant;
- * The training department should design and disseminate the follow-up and evaluation plan among the DID units, pointing out objectives, information needed, application of the training content in the job, implementation of action plan, etc.;
- * The training department should collect and compile information on the impact of training in the field and disseminate among the DID units in the country; and
- * The training department should be responsible for and committed to the development of competent, self-confident and motivating trainers to attract the attention and interest of the training participants.

PERSONAL AND INTERPERSONAL DEVELOPMENT ISSUES

The role of manager-leaders in irrigation systems was discussed during the two three-day events. The main aim was to reflect on the qualities of manager-leaders in order to bring out examples of attitudes which facilitate their role.

The participants worked in small groups to list the five best qualities of a manager-leader. The following qualities were identified by more than one group: vision; commitment; intelligence and knowledge; positive attitudes like enthusiasm; respect; and care or concern.

Participants in the third event also took part in a series of exercises aiming to facilitate awareness of specific attitudes and the development of soft skills like sensitivity, good listening ability, perception, and so on. They also prepared action plans for introducing appropriate changes in their work environments after their return. These included plans for improving communication with staff and farmers to develop motivation. An example of an action plan to develop motivation among staff is presented below.

OBJECTIVES

To improve productivity.

To improve spirit of cooperation, involvement and commitment.

To improve career prospects.

TARGET GROUP

Mechanical crew.

WAYS OF MOTIVATING

Creating promotion plan.

Showing recognition through diverse mechanisms, such as writing letters, praising staff generously, providing awards, etc.,

Communication, approaching people, showing interest in listening to them, etc.

WAYS OF COMMUNICATING THIS PLAN TO THE TARGET GROUP

Through dialogues and meetings.

IMPLEMENTATION

The plan will be implemented immediately and will be continuous and dynamic.

WAYS TO FOLLOW UP AND TIME FOR EVALUATION

Quarterly evaluation through surveys and interviews.

ANTICIPATED RESULTS OF THIS PLAN

Higher productivity.

Better working environment.

Happy workers.

More open management-worker relationship.

EVALUATION OF THE STRATEGIC PLANNING WORKSHOPS

The evaluation of these three activities by the participants showed that, in general, they considered the objectives for each event to have been well-achieved. The average rating for the three events as a whole was 4.25 on a scale from 1 (lowest) to 5 (highest).

In general, the participants expressed themselves to be very satisfied with the discussion on DID's mission statement and strategic planning and management process exercises. They were less satisfied with the accomplishment of the objectives related to performance issues, rating the level of achievement of objectives in this respect as only slightly above average. This may suggest that performance measurement is still a complex issue within DID and that the treatment of it did not fulfill their expectations in this respect very well.

In the three events as a whole, issues related to program orientation, group atmosphere, interest and motivation received an average rating of 4.25, showing a high level of satisfaction among the participants in respect of these topics. It was noted, however, that participants in the third workshop, with a mixed program of organizational, personal and interpersonal development issues, expressed the highest level of satisfaction with items related to program participation, analysis of interpersonal style, group atmosphere, interest and motivation, as well as for the event as a whole. This suggests that management training programs should deal with the affective domain of learning as well as the cognitive domain -- a combination which has proved to increase motivation and interest among the participants, besides developing strong feelings of accomplishment.

Management training programs should deal with the affective domain of learning as well as with the cognitive domain.

Among the strong points of the three events were:

Concepts, clarity of organization and communication;

Enthusiasm and commitment of facilitators and presenters ;

Frank sharing of experience on both sides; group size was just right; IIMI training team members were very dedicated, experienced and motivated;

Group atmosphere was maintained; basic principles of management were well-prepared and exercises well done;

Objectives of the meeting were achieved with the various aspects well-discussed;

The message of the meeting was effectively absorbed; the facilitators acted as motivators to improve productivity and achieve its goals; materials were significant and helpful; it was a complete exercise with regard to engineering management;

Active interaction and participation of all members;

Created self-awareness to recognize one's capabilities and weaknesses for self-improvement;

Highly innovative, was very revealing in detecting one's own strengths and weaknesses; many group exercises; and

The explanatory talks were short and concise and were followed by relevant exercises.

Some of the weak points identified by participants were:

Time constraints (but the message could be imparted); needed more time for discussion and expression of different opinions before the final presentations;

Concentration was difficult;

The first day was rushed;

Some members in each group were not fully participative;

Too many new concepts for the mind to absorb at once; new concepts and insights need time to digest; and

Physical arrangements for the group discussion could have been better.

Suggestions for improving the effectiveness of the events included the following:

Handouts should be distributed for reading before the sessions;

An additional day may be provided for personal and interpersonal development, which should be conducted at a slower pace;

More time should be allowed for determining and discussing performance indicators, standards and measures;

More reading materials and more detailed guidelines and procedures should be made available to participants;

Sessions should include examples from other agencies (outside Malaysia if necessary);

More homework may be provided; and

At least one example of performance indicators and standards in a public-sector agency similar to DID should be provided.

CONCLUSION

The activities described in this chapter represented the first stage in the development and implementation of a process of strategic planning, including a human resources development plan, for DID.

The active participation of the top management and senior managers from all levels in the organization developed their awareness of the need, first, to review DID as an organization, including its mission or goals, objectives, strategies, activities and the performance assessment system, which are a part of strategic planning; and second, to design a human resources development plan to ensure the implementation of a systematic training program and the assessment of staff performance.

The strategic planning process was initiated during the three events described above. The DID managers who participated in the exercise of reviewing and defining the DID mission statement, objectives, strategies and activities during the first events subsequently went on to define organizational objectives, strategies, activities and performance indicators, measures and standards for the second and third levels of management at the various worksites.

In order to facilitate the participation of IIMI in this strategic planning process and the measurement of the results achieved as soon as possible, DID selected two pilot irrigation schemes in Besut and Kerian where special attention was given to intensify this process. The managers of these two systems began to repeat the process with lower-level managers in preparation for a workshop which was planned and held in Besut in September 1992. In addition, a special program was designed and a collective training of all staff of these two schemes was conducted using the training modules prepared for the initial training courses for engineers and overseers. This collective training was conducted by the Malaysian trainers during the first semester of 1992.

This special training program formed part of the DID contingency plan for human resources development for 1992, which was an interim measure pending the completion of the strategic planning process at DID.

It was observed that performance assessment still constitutes a challenge among the DID staff. Even though the discussion on performance indicators, measures and standards has increased awareness of its importance among the DID management as a means of measuring the achievements of the organization, participants in the workshop in Besut were less satisfied with the accomplishment of the objectives in this respect.

In September 1992, the last training programs of the joint effort of DID and IIMI were implemented to complete the reorientation of the organization at the field level. These programs facilitated the definition of objectives, strategies, field activities, performance indicators, measures and standards to evaluate the personnel and the irrigation systems of Besut and Kerian. They included an interactive workshop for the staff of the Besut Scheme about the process which was taking place at DID, and a meeting with farmers in the Besut Scheme to discuss their level of satisfaction with the services provided by the DID field staff of that scheme. These activities are described in Chapter 15.

A training on research into the performance of irrigation schemes was also conducted, to sensitize the managers of the Besut and Kerian schemes to the need to carry out further investigations to find solutions to their currently unsolved problems. This activity is described in Part V, Chapter 17.

These final activities were planned to lead to the complete sustainability of management training for institutional development at DID.



CHAPTER 15

Strategic Planning and Human Resources Development at the Field Level

INTRODUCTION

AS A RESULT of the three strategic planning workshops for the top management of DID, described in the previous chapter, the strategic planning process was extended to the field level in the Kerian and Besut irrigation schemes. The aim was to complete the process with activities which would enable DID to measure results at the farming level. The activities were aimed at the managers of the Besut and Kerian irrigation schemes. They took place in Besut, Terengganu, from 21 September to 1 October 1992, and comprised:

- * A workshop on strategic planning and a human resources development program, for the managers of the two schemes;
- * An informative workshop for the staff of the Besut Scheme; and
- * A meeting and interviews with farmers, on the services provided by the staff of the Besut Scheme.

The strategic planning process was extended to the field level to enable DID to measure results at the farming level.

The major objectives of the Workshop on Strategic Planning and the HRD Program were:

- * To disseminate and interpret the DID mission statement along with the major objectives and strategies of the organization; and
- * To define and discuss objectives, strategies, activities, performance indicators, measures and standards for evaluating the personnel and the irrigation systems in Besut and Kerian.

The Informative Workshop for the Besut staff aimed to disseminate the mission statement and to discuss the objectives, strategies, activities and performance indicators for performance evaluation of the Besut staff.

The aim of the meeting and interviews with farmers was to assess their views on the services provided through the Besut Scheme, and to inform them about the HRD programs which were being developed to improve the ability of the DID staff to provide the assistance they needed.

The results of these activities are discussed below, with most attention being paid to the Workshop on Strategic Planning and the HRD Program for the managers of the two schemes.

THE BESUT AND KERIAN IRRIGATION SCHEMES

The Besut Irrigation Scheme is located in Terengganu State and is served by two gravity intake structures, the Besut Barrage and the Angga Headwork, which irrigate 3,900 and 960 hectares of rice land, respectively. The irrigation systems are interconnected, giving a total irrigation area of 4,860 hectares.

The farmers in the Besut Scheme operate under seventy Irrigation Service Units (ISU). Under each ISU there is a head farmer, who in turn controls ten contact farmers. The major problems encountered in the Besut Scheme are: shortage of water during the drought period; farmers who do not follow the planting schedule; and farmers who are not full-time farmers (Besut 1992).

The Kerian Irrigation Scheme has a command area of 24,000 hectares, divided into eight compartments, designated A to H. The upstream compartments E to H get their supply from the Bukit Merah Reservoir, while the downstream compartments A to D, on the coast, get their supply from the reservoir supplemented by the Kerian River through the Bogak Pumping Station. The reservoir is also used as a source of domestic and industrial water.

There are no water users' associations in the scheme. The main operational participation of the farmers is in the opening and closing of farm offtakes. Farmers also provide maintenance (cleaning of canals) for about 77 percent of the canals. There is no direct or active participation of farmers in the allocation and distribution activities of the scheme. Among the problems of the Kerian Scheme are fluctuations in the water levels and lack of motivation among staff to undertake intensive measurement in the canals. This is exacerbated by the nonadherence of the farmers to cropping schedules (Valera 1991).

Background information on the schemes and their problems was presented during the Workshop on Strategic Planning and the HRD Program and the participants discussed ways of overcoming the problems which were being encountered.



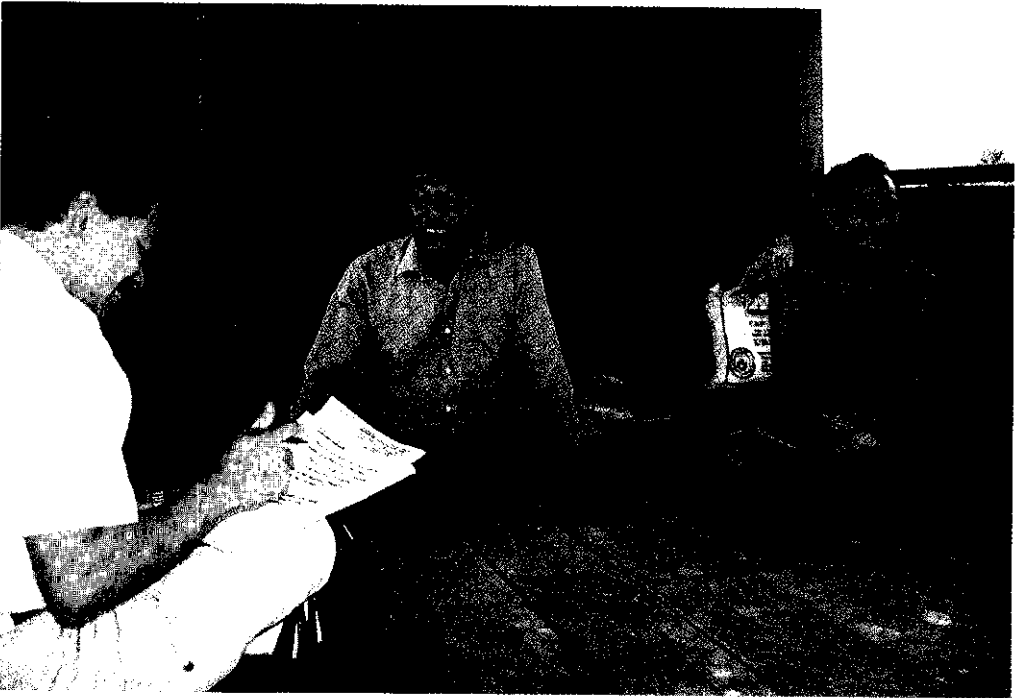
The DID managers of Besut and Kerian discussing and defining strategic planning issues and the HIRD plan for their schemes.



Discussions during the Informative Workshop for the staff of the Besut Scheme.



Meeting with farmers of the Besut Scheme.



Mr. Nik Ahmad Ariff bin Sulaiman interviews a farmer of the Besut Scheme.

INTERPRETING THE DID MISSION STATEMENT

Participants in the Workshop on Strategic Planning and the HRD Program worked in small groups to produce statements which would help to interpret the DID mission to different audiences, including the government and the minister, other agencies, clients, farmers and consumers, and the staff of DID. The exercise aimed to disseminate the mission statement and help the participants to understand and internalize this statement of the major goal of DID, which they should be committed to achieving.

The mission of DID was stated in the following terms:

To provide quality, efficient, effective service through planning, implementation and management of works, facilities, in the field of irrigation, drainage, river engineering, coastal engineering, and to interact with related agencies and the public in order to achieve sustainable national development.

The interpretations of this general statement, designed to communicate its aims to different groups, emphasized different aspects of the activities which DID would carry out in performing this mission. Some examples are given below.

FOR THE GOVERNMENT AND THE MINISTER

- * Provide quality and efficient service in irrigation, agricultural drainage, river engineering, coastal engineering, hydrology and supporting services; and
- * Keep in line with the requirements of the various objectives and strategies outlined in the Vision 2020 statement, the National Development Policy, the Outline Perspective Plan Two and the National Agricultural Policy.

FOR OTHER AGENCIES

- * Foster close cooperation with related agencies to achieve national goals; and
- * Interact with related agencies to achieve sustainable national development.

FOR CLIENTS, FARMERS AND CONSUMERS

- * Provide properly planned services and efficient management all the time; and
- * Provide quality, effective and efficient services to meet the needs of clients, farmers and consumers.

FOR THE STAFF OF DID

- * Provide good quality, efficient and effective services through proper planning, implementation and management of works and facilities in the fields of irrigation, drainage, river engineering and coastal engineering; and
- * Provide necessary services, facilities, information, directions, motivation, support and training, sensitive to the requirements of clients.

A document containing the objectives, strategies, activities, performance indicators, measures and standards defined by the DID management for the Irrigation Branch was also discussed.

OBJECTIVES, STRATEGIES, ACTIVITIES AND PERFORMANCE INDICATORS, MEASURES AND STANDARDS

The objectives, strategies, activities and performance indicators, measures and standards of the Besut and Kerian schemes were presented and discussed by the participants.

Since the Besut Scheme is located in Terengganu State, the objectives of DID at the state level were presented to provide a basis for identifying objectives, strategies, activities and performance issues for implementing the mission of DID at the district level, as follows:

OBJECTIVE FOR TERENGGANU STATE

To improve the standard of living of farmers through provision of drainage and irrigation infrastructures.

OBJECTIVE FOR THE DISTRICT OF BESUT

To increase the agricultural production of farmers through efficient and effective operation and management of the scheme.

STRATEGIES

To ensure the complete and timely provision of data on the extent to which:

- * Standing orders are updated and followed;
- * Work schedules are followed;
- * Duties and tasks are clearly defined;
- * Operation manuals are clearly understood and followed; and

- * Adequate facilities and equipment are provided.

In relation to the activity of collecting these data, the following performance indicators were identified: timeliness in collection and furnishing of data; and completion of reports. An appropriate performance standard in relation to this activity would be that at least 80 percent of the data should be furnished within the stipulated time frame.

The discussion of strategic issues in respect of the Kerian Scheme produced the following results:

OBJECTIVE OF THE KERIAN SCHEME

To operate the irrigation and drainage systems in order that double cropping of rice can be achieved through the current crop agronomy practices.

STRATEGY FOR THE KERIAN SCHEME

To modify and alter the irrigation and drainage physical system to accommodate current farming practices.

Among the activities required to implement this strategy would be that of operating the Bukit Merah Reservoir and Sg. Bogak Pump Station and the main canal system to enable double cropping of rice at nominal pumping cost in a normal year. Suitable performance indicators would include the availability of water requirement at the compartment level, and the pumping cost. Appropriate performance standards would include: up to 95 percent of water required available within the specified period; and within 10 percent (plus or minus) of the average historical pumping cost.

The participants also reviewed the objectives for the Kerian and Besut schemes in terms of development, and operational, maintenance, and organizational and management support.

PERFORMANCE ASSESSMENT

This session of the Workshop on Strategic Planning and the HRD Program was concerned with assessing the performance of irrigation institutions and personnel. Performance assessment in relation to irrigation systems is discussed in Chapter 17. The workshop participants discussed issues related to management performance assessment, the identification of specific performance categories, measures and standards. The publication *Guidelines for institutional assessment, water and wastewater institutions* issued by the Water and Sanitation for Health (WASH) Project in February 1988 (Cullivan 1988) was used to facilitate the discussion and exercises during this session.

The following performance categories applicable to an irrigation institution were identified:

- * Organizational autonomy;
- * Leadership;
- * Management and administration;
- * Commercial orientation;
- * Consumer orientation;
- * Technical capability;
- * Developing and maintaining staff;
- * Organizational culture; and
- * Interactions with key external institutions.

Four of these categories were selected to provide a basis for evaluating the performance of the DID management. These were: management and administration; commercial orientation; consumer orientation (farmers); and developing and maintaining staff. This was an experiential learning exercise designed to facilitate the participants' understanding of how they should conduct an institutional performance evaluation which requires the participation of the entire staff of the organization.

The participants also worked in small groups to define indicators to evaluate the institutional performance of the Besut and Kerian irrigation schemes. As an example, one group selected the performance category -- consumer orientation, and identified relevant performance indicators as: the number of meetings attended by the staff; the number of complaints received by the organization; the availability of the staff to do extension services; and the percentage of planned training activities which were actually implemented.

The participants were also asked to define performance indicators, measures and standards for staff and the service outputs of irrigation systems. The chosen indicators were mostly of a general nature and used broad terms which made it difficult to identify the behavior or other factors that have a positive or negative influence on staff performance. For example, the managers of the Kerian Scheme defined timeliness as an indicator of staff performance. However, timeliness results from a series of human behaviors, such as responsibility, seriousness, commitment and knowledge, which should be observed by supervisors to provide feedback to the staff and to enable them to intervene when necessary to ensure improved results. Staff performance indicators should facilitate awareness of the observed behaviors among the staff and supervisors, and prevent the supervisor from evaluating the staff performance only at the end of the process, when there is less opportunity to intervene so as to improve the results.

It was suggested that the following steps should be taken in defining indicators to evaluate staff performance:

1. Identify and name the activity to be observed.
2. Identify the tasks involved in performing the activity:
 - * Planning;
 - * Implementation;
 - * Evaluation.
3. Define performance indicators.

This should be based on the three domains of human learning:

- * The cognitive domain;
e.g., knowledge, understanding the tasks, thinking, etc.,
- * The affective domain;
e.g., attitudes and behavior,
- * The psychomotor domain;
e.g., tasks which involve manipulative skills.

In summary, the staff should demonstrate competence (aggregated competence) in these three domains. Performance indicators should be approved by the staff, who should be aware that observations on indicators related to the cognitive and psychomotor domains will be done by their supervisors alone, while those relating to the affective domain will be done by their supervisors, peers, subordinates and clients (or end users).

PLANNING FOR HUMAN RESOURCES DEVELOPMENT (HRD)

Planning for Human Resources Development (HRD) was presented as a process whereby the organization tries to determine the human resource needs and to satisfy them. Usually, the HRD programs are designed to achieve the following objectives (Irrigation training 1989):

- * To ensure the development of management, technical and administrative skills necessary to fulfill the organization's objectives in order to retain prepared personnel within the department; and
- * To provide opportunities for self-development to guarantee work satisfaction among staff members.

The strategic decisions in developing the HRD plan, as presented in the above publication, were discussed under the following headings:

- * Articulation of objectives, targets and goals- the corporate mission;
- * Definition of functions and tasks;
- * Identification of key issues and priorities;
- * Definition of requirements of training programs;
- * Development and review of training budget; and
- * Monitoring and evaluation of program.

The participants were then invited to prepare draft HRD plans for the Besut and Kerian schemes, using the following outline:

1. Identify the goals and objectives of the HRD programs;
 - * List the major objectives of the irrigation wing or system;
 - * List the numbers of staff in each category who will be affected by this plan; and
 - * List the number of other partners (agencies and users) who will participate in the activities of the HRD plan.
2. Identify functions and activities to be performed by management, staff and other clients (development, operational, maintenance, organizational and management support).
3. Define a lifetime for the HRD plan.
4. Identify the relative priorities of the various activities and tasks to be implemented during the defined lifetime of the plan.
5. List the specific HRD activities to be implemented during the lifetime of the plan, and develop programs to implement them.
6. Describe the organization and methods of implementation for each of the defined HRD activities.
7. Determine budget requirements for the planned HRD activities.
8. Schedule and identify the methodology to be used to follow up and evaluate the planned HRD activities.

9. List the anticipated results of the HRD plan.

10. Identify ways of measuring the results and the impact of the HRD plan.

The results of this exercise constituted preliminary drafts of the HRD plans for the Besut and Kerian schemes. The participants committed themselves to discussing these drafts with their staff and to preparing the final HRD plans to be implemented in 1993.

INFORMATIVE WORKSHOP FOR STAFF OF THE BESUT SCHEME

About twenty staff members from the Besut Scheme participated in a half-day workshop on the implementation and translation of the DID mission statement and objectives for practical operation at the district level. Staff of the Kerian Scheme and the members of the IIMI training team were present as observers.

The major outputs of this exercise were:

- * Increased awareness of the processes of strategic planning and HRD being implemented in DID;
- * Knowledge of the DID mission statement and the major objectives of the organization; and
- * Participatory discussion and improved knowledge of the Besut staff on the objectives, strategies, activities for the scheme and performance indicators, measures and standards which will be used to evaluate their own performance.

It is expected that the exercise will lead to:

- * An increased level of commitment, motivation and participation in teamwork on the part of the Besut staff;
- * Increased interest and commitment towards the accomplishment of the DID mission and objectives of the Besut Scheme;
- * Improved objectives for the Besut Scheme; and
- * Better performance on the Besut Scheme.

MEETING AND INTERVIEWS WITH FARMERS

About eighteen farmers from the head, middle and tail end of the irrigation canals in the Besut Scheme took part in a meeting designed to make them aware of the DID concerns on improving the performance of its staff in the field. In addition, ten farmers were interviewed individually to obtain their views on the general level of assistance they received from the DID field staff in the Besut Scheme. This information was to be used in future as the foundation for a comparative evaluation of the performance of the Besut staff, in order to assess changes in their behavior in respect of farming services.

A questionnaire was prepared to collect information on the field visits of the DID staff, including how frequently such visits were made, how much time was spent in solving farmers' problems, and how effective the proposed solutions had been so far in meeting farmers' needs. Questions were also asked about the quality of the services provided, the actual level of satisfaction among farmers with regard to the assistance provided by the field staff, participation of the field staff in farmers' meetings, their enthusiasm and interest in solving farmers' problems and suggestions as to the content of training for the field staff.

In general, the farmers considered that the field staff of the Besut Scheme were providing reasonable assistance in solving their problems. Some 70 percent of the interviewees stated that DID staff visited the field weekly, and indicated that the problems put to them generally related to water distribution, to the complete absence of water or too much water, and to agricultural issues.

All the farmers interviewed emphasized that they were constantly in need of advice from the DID field staff on difficulties in irrigation or on issues related to agriculture, such as pest control, crop production, soil-borne diseases, land preparation, application of fertilizers, and so on. About 30 percent of the farmers were dissatisfied with the level of maintenance of the irrigation system, mainly because repair work had been coinciding with the water delivery schedule.

All the farmers emphasized that they were constantly in need of advice from the DID field staff.

The farmers also made suggestions for improving the field inspection routine. Among others, they proposed that farmers and the DID officers should improve communication by having more frequent discussions. There was a need for increasing the number of meetings with farmers according to fixed schedules and places, mainly to provide advice on agricultural issues. One farmer mentioned that often, the field visits were skipped by the field officer because he was too busy with other commitments.

In general, the farmers recognized that the field staff were able to help them to solve their problems; however, 20 percent felt that there was still room for improvement, while understanding that it was difficult for the field staff to satisfy all the farmers' needs.

Regarding the participation of the DID officers in meetings of the farmers' associations, 60 percent of the farmers said that, in general, the officers attended meetings only when they were invited to do so. Such invitations would be related to

major issues to be discussed, and would depend on the farmers' need for special recommendations or advice from the field officers. When officers were present at farmers' meetings, their participation was generally very effective. They often gave good suggestions and agreed on future actions. However, 20 percent of the farmers said that field staff were not able to participate effectively and give sound opinions on the issues raised during farmers' meetings due to their lack of knowledge of the problems. This in turn was due to their frequent absence from the area. The remaining 20 percent of respondents did not have proper information on this issue.

In general, the farmers' assessments of the performance of the DID field staff indicated that they showed a high level of enthusiasm and interest. Suggestions for improving the performance and attitudes of the field staff were concerned with increasing the number of meetings, improving cooperation between farmers and officers, and the provision of better assistance to the officers by their supervisors. The farmers also recognized that they themselves should show enthusiasm by attending meetings, developing cooperation and showing willingness to try new techniques in the field, as well as approaching officers and initiating communication and interaction with them.

Most of the farmers' suggestions for the content of training for field staff were related to agricultural problems such as pest control, seeds, fertilizer application, land preparation, and so on. Few suggestions were related to water management and project information. Some farmers felt that the field staff were performing well and that the farmers should be the ones to be exposed to training.

As a result of the implementation of this program in Besut, it is anticipated that there will be an increased level of satisfaction among farmers due to the improvement of communication with the DID officers who, in turn, will pay greater attention and provide better irrigation services at the farming level.

EVALUATION OF THE WORKSHOP ON STRATEGIC PLANNING AND THE HRD PROGRAM

Two kinds of evaluation were developed and applied during the workshop, namely, participants' self-evaluation and program evaluation. The self-evaluation showed that, overall, participants considered their knowledge, skills and confidence to have increased by about one-third during the course of the workshop.

The results of the program evaluation showed that, in general, the participants considered that the objectives of the workshop were achieved well, particularly in respect of group atmosphere, interest and motivation, participation, and productivity. Strong points identified by the participants included: teamwork; insight into the systematic approach to system management and performance evaluation; well-presented lectures and exercises; competent and knowledgeable resource persons; and the development of a clear mission for DID and for the Besut Scheme. The main weak point was lack of time.

CONCLUSION

The activities conducted in Besut in September 1992 constituted the final and necessary step to operationalize the DID mission and objectives at the field level in two selected irrigation schemes in Malaysia.

The major outputs of the activities were:

- * Interpretation of the DID mission statement by the Besut and Kerian staff;
- * Definition of objectives for the Besut and Kerian schemes along with some strategies, activities, performance indicators, measures and standards for evaluating personnel;
- * Increased awareness of the importance of performance indicators for evaluating irrigation systems;
- * Draft HRD plans for the Besut and Kerian schemes, to be refined by the scheme staff and implemented later; and
- * Improved commitment of the management staff of the Besut and Kerian schemes, to prepare drafts for strategic planning issues for both schemes to be discussed and defined during the workshop with the IIMI training staff in September 1992.

The Director General of DID, in an interview on 2 October 1992, confirmed the increased level of interest and commitment among personnel of the Besut and Kerian schemes, stating that

I am sure that the process we have gone through ... would definitely be most effective towards improving irrigation performance as a whole in the country.

The impact of these activities on the performance of the staff of the Besut and Kerian schemes will be assessed at a later stage. However, the major anticipated impact is that the managers of these two schemes will reinforce the planning process and demonstrate commitment to achieving the DID mission through monitoring, evaluating and diagnosing problems in order to investigate them and provide prompt and relevant responses through research activities at the field level. These expectations led IIMI and DID to develop the final stage of this management training for institutional development program, which is described in Chapter 17.

PART V

THE ROLE OF RESEARCH

AN IMPORTANT ELEMENT in the process of developing management training programs for DID was the involvement of irrigation researchers in the TNA process itself, as described in Chapter 16. This enabled them to identify the skills required to conduct research in irrigation management which in turn would provide a basis for the development of training programs. For the researchers, participation in the program also provided an important opportunity for them to discuss existing irrigation management problems and to develop awareness of the need to investigate their problems in collaboration with the DID staff, so as to provide the department with relevant information to improve the performance of irrigation systems in Malaysia.

Chapter 17 presents the results of a training workshop on research on the performance of irrigation systems, which constituted the final activity necessary to prepare the DID staff to assume responsibility for monitoring and evaluating the system performance, and identify problems whose solutions are unknown and require research.

CHAPTER 16

Involving Researchers in the Training Cycle

INTRODUCTION

IIMI IS AN international agricultural research center which aims to strengthen national efforts through assistance for the development of research, management training and institutional development, information exchange and networking, and strategic dialogue and consultation. IIMI develops collaborative research in various countries and expects to disseminate its results through its management training programs.

Researchers in irrigation management are therefore one of IIMI's target groups. IIMI works in partnership with research organizations in countries to provide irrigation agencies with relevant research results for the improvement of irrigation systems. Management training is a means of disseminating these research results and of influencing irrigation organizations to apply them.

Members of the research community in Malaysia were invited to participate in the TNA exercise in order to become acquainted with the joint program of IIMI and DID, which aimed to improve the performance of irrigation schemes and consequently to increase agricultural productivity. DID itself did not have an established program for research in irrigation management, which was the responsibility of MARDI, within the framework of its general agricultural research program. However, DID and IIMI expected to interact with researchers from MARDI and other Malaysian organizations to initiate a relationship which would promote future collaborative research programs to solve irrigation management problems in Malaysian systems.

DID as an irrigation organization, needs support from research organizations in the study of irrigation management problems and the identification of solutions, as well as in providing information to strengthen the DID training programs. The group of researchers who participated in the TNA included researchers from MARDI and UPM, together with the DID staff members with a strong interest in developing research in irrigation management. They were treated as a resource group to assess the job requirements for carrying out research in irrigation management.

The organization, implementation and results of this TNA session are described below.

OBJECTIVES OF THE SESSION

The TNA session for researchers aimed to discuss irrigation management concepts related to current and future research topics developed in research organizations in Malaysia, in order to assess the skills required by future research professionals. To accomplish this objective, the session was designed to provide the participants with an opportunity to discuss:

- * The concept of irrigation;
- * The jobs and tasks of researchers;
- * The managerial knowledge, attitudes and skills required by researchers; and
- * The organizational constraints affecting their work as researchers.

METHODOLOGY

The methodology for this session was similar to that applied in the TNA sessions for trainers described in Chapter 7.

PRESENTATION OF THE ANALYTICAL FRAMEWORK FOR IRRIGATION MANAGEMENT

The discussion of the Analytical Framework stressed that both technical and managerial components are important to irrigation research and that both should be treated with the same level of attention. The discussion of the framework was considered to be useful. The participants made valuable comments about research in irrigation management.

JOB ANALYSIS

The job analysis was done by using the *Format for self-analysis of irrigation jobs*. In summary, the researchers showed clear understanding of the technical and managerial aspects of their jobs by their responses to this questionnaire.

IDENTIFICATION OF MANAGERIAL KNOWLEDGE AND ATTITUDES AND SKILLS

This segment aimed to encourage participants to analyze research activities and translate them into the managerial knowledge, attitudes and skills needed to carry them out successfully. The session was conducted in the same way as that for trainers, described above, and long lists of elements of managerial knowledge and attitudes were produced as a result of the brainstorming session and consolidated under the same headings as were used in the trainers' sessions. A sample of the elements identified by the researchers is given below.

MANAGERIAL KNOWLEDGE

How to interact

- * Understanding farmers' needs (culture, religion, behavior, etc.); and
- * Interaction between agencies and different professionals, etc.

How to manage human resources

- * How to organize and manage farmers (of different groups); and
- * Understanding the concept of research work.

Planning, monitoring and evaluation

- * How to predict, forecast, and conceptualize; and
- * How to prepare a research proposal (define approach and methodology, timeliness and objectives).

How to use criteria and set priorities

- * Institutional mechanisms of research coordination and funding (national and international); and

- * How to prioritize.

How to manage information

- * How to obtain information; and
- * How to disseminate and implement.

MANAGERIAL ATTITUDES

How to stimulate communication

- * Receptivity; and
- * Humbleness.

How to build up confidence

- * Team spirit; and
- * Tolerance.

How to motivate others

- * Supportiveness; and
- * Trustworthiness.

How to improve oneself (self-improvement)

- * Sensitivity; and
- * Innovativeness and creativity.

How to direct and control

- * Professionalism; and
- * Diligence.

RESEARCH PRIORITIES

The participants were invited to assign priorities to the items on the brainstorming list, emphasizing those which should be developed as the course content of a first training program for new researchers. The individual priorities were subsequently consolidated and overall priorities for managerial knowledge and attitudes for researchers established.

In terms of managerial knowledge, first priority was given to how to prepare a research proposal (define approach and methodology, objectives and timeliness). In second place came problem analysis, closely followed by: staff management (staff deployment, rewards, sanctions, skill development, how to spot talent and evaluate aptitude), and how to motivate; how to influence; how to convince; how to delegate authority; how to be a leader and team building, as third priority. Fourth priority was given jointly to how to obtain information (existing and new data), how to coordinate and interact between agencies, different professions, and basic human psychology. Technical knowledge was assigned fifth priority; how to define research needs, sixth; and institutional mechanism of research coordination funding (national and international), seventh. Eighth priority was assigned to applied research (practical and problem solving), and how to disseminate and implement research findings came last on the list.

Managerial attitudes were grouped in the following order of priority: innovativeness and creativity; confidence; commitment; interest; integrity; concern (for the performance of the irrigation system, for target groups of clients and for working as a team); truth; objectivity -dedication; adaptability; flexibility.

IDENTIFICATION OF ORGANIZATIONAL CONSTRAINTS

The participants were invited to discuss the organizational constraints which were contributing to reducing their performance as researchers. They pointed out some of the technical constraints related to the development of irrigation capacities such as lack of comprehensive surveys and statistics to produce good criteria for staff requirements. They also cited constraints provoked by the irresponsibility of technicians and laborers; the lack of skilled technicians; lack of commitment to the job; lack of manpower; lack of training; and others.

CONCLUSION

The aim of the TNA session for researchers was twofold. First, it aimed to discuss training issues and collect information for the design of training programs to help develop research capacity in the country. Second, it aimed to provide researchers from MARDI and UPM and the future researchers from DID with the opportunity to interact, to discuss irrigation management issues for research, to realize that DID needed their support in studying irrigation management problems in partnership, and to propose possible solutions.

As a result of this session, the information provided by the participants for designing training programs for future researchers was very satisfactory. However, the level of discussion on irrigation management issues, aiming to raise awareness of the DID irrigation management problems and increase interest in the possibilities of developing research to support DID, was very weak. The participants preferred to discuss the research they were doing in the field of agriculture in general, not specifically in irrigation management.

The information provided for designing training programs for future researchers was very satisfactory.

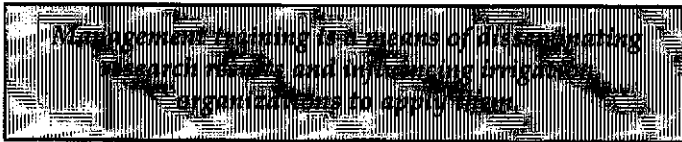
CHAPTER 17

Involving Irrigation Practitioners in Irrigation Management Research

INTRODUCTION

If research and evaluation in irrigation management are to be relevant to the real needs of the irrigation sector, they must involve irrigation practitioners – that is, irrigation professionals involved on a day-to-day basis with the management and operation of irrigation systems.

Too often, in developing countries, research on irrigation issues is carried out by people from outside the irrigation sector, mainly from ministries of agriculture or from universities. These researchers study irrigation systems for their own purposes, using them as sources of data without involving the irrigation managers, who could greatly contribute to making such research studies more relevant to the improvement of the irrigation performance. Because irrigation practitioners are not generally involved in research, the real needs of irrigation systems have been neglected and they have not achieved the expected level of performance.



With the aim of overcoming this problem, the IIMI approach to irrigation management training for institutional development in Malaysia was designed to be twofold.

First, the program, in its early stages, involved researchers from universities and other agencies, aiming to identify skills needed to conduct research in irrigation management and encourage them to identify key issues and problems in irrigation management research in the country. Second, the program aimed to sensitize irrigation practitioners in the Besut and Kerian schemes to the need to evaluate the performance of irrigation systems and to carry out further investigation of problems for which solutions have still to be found. The results of such investigations, in turn, would be incorporated in future training programs for irrigation managers and so help to solve the systems' problems and strengthen the content of the training programs to ensure their relevance to the real needs of the irrigation sector.

This second objective was to be achieved by means of a Workshop on Research on the Performance of Irrigation Systems, designed for irrigation managers in the Besut and Kerian schemes and held in Besut from 25 to 28 September 1992. The aims, content and results of the workshop are described below.

A total of fifteen irrigation professionals participated in the workshop. Most of them were irrigation managers from the Besut and Kerian irrigation schemes, but two DID trainers and one professor from Universiti Pertanian Malaysia (UPM) also participated, with the aim of developing the skills needed to be able to conduct further programs for training and research in irrigation management in Malaysia.

OBJECTIVES AND OUTPUTS

The general objectives of the research workshop were:

- * To discuss issues related to the monitoring and evaluation of the performance of irrigation schemes in order to make the participants aware of the complexity of irrigation systems, which call for thorough investigation of problems for which solutions have yet to be found;
- * To assess research issues relevant to the Besut and Kerian schemes;
- * To develop basic research skills;
- * To practice formulating research proposals;
- * To discuss research methodologies; and
- * To prepare an action plan for a collaborative program of research with universities in Malaysia.

The research skills required of irrigation practitioners are related mainly to evaluating the performance of irrigation schemes in order to diagnose problems requiring further investigation through research projects. Irrigation managers and researchers from universities and other research organizations are thus expected to work together to find out the causes and propose solutions in respect of the performance of irrigation systems in Besut and Kerian.

The outputs expected of the workshop included:

- * Improved knowledge on research issues among the participants;
- * Selected performance indicators which are relevant to evaluate the Besut and Kerian schemes in 1993 and beyond;

- * A draft action plan for monitoring and evaluating the Besut and Kerian irrigation schemes;
- * A list of research issues relevant to the needs of the Besut and Kerian schemes;
- * A draft proposal for carrying out research into the research issues identified;
- * A draft action plan for collaborative research between DID and UPM;
- * Increased interest in monitoring and evaluating the performance of the Besut and Kerian schemes;
- * Increased awareness of the need to develop research skills among irrigation engineers and managers;
- * Increased awareness of the fact that research and training are complementary in promoting institutional development;
- * Increased awareness that research results provide the basis for developing relevant and effective training programs to meet the needs of DID; and
- * Increased awareness of the fact that training on research issues develops the potential of engineers and managers to improve and sustain irrigation system performance.

The workshop lasted for four days. A set of training modules was produced to support the learning process. These included a general plan, objectives for each day, directions on training methods and techniques, exercise sheets, handouts, overhead transparencies, and flip charts and evaluation forms for the participants' self-assessment and assessment of the training program. During the workshop, some of the exercises were improved or modified to meet the needs of the participants.

The main topics discussed, and the principal activities and results of the workshop, are described below.

INTERDISCIPLINARY RESEARCH

On the first day of the workshop, the research process was introduced as a cycle comprising the identification of a research problem, a review of previous work, the formulation of specific research objectives and hypotheses, the design of research procedures for data collection, the organization of these data, their analysis, the formulation of conclusions and finally, reporting the findings.

The different attitudes and behavior of researchers and managers were described. In general, researchers tend to be conservative, to have narrowly focused interests, and to appreciate accuracy and precision. Managers, on the other hand, are more opportunistic, more action-oriented, and more ready to take risks and to compromise.

These differences may make it difficult to build interdisciplinary research teams, but the interdisciplinary approach produces results which are significantly superior to those that a single researcher might produce. This approach should therefore be pursued, even though it constitutes a challenge for the research team coordinator.

Factors with a positive effect on interdisciplinary research were discussed. They included: competence; dedication; leadership qualities; good communication; institutional support; adequate funds and good financial management. Problems which might arise among the members of an interdisciplinary research team were also discussed. They included: competition among team members as to the relative importance of different disciplines; competition for scarce resources and funds; and so on. This exercise provided participants with the opportunity of analyzing past experiences in dealing with people of different backgrounds and interests and analyzing how best to deal with them.

The role of support staff in the interdisciplinary research approach was also discussed, and it was pointed out that the success of a research program depends on active collaboration and cooperation among higher management, researchers, project leaders and support staff of the organization. The importance of effective interpersonal communication in order to promote understanding of the research problem and to create a supportive working relationship was cited as one of the key factors in ensuring the achievement of expected results.

The success of a research program depends on active cooperation among higher management, researchers, project leaders and support staff.

THE COMPLEXITY OF IRRIGATION SYSTEMS

The discussion of this topic was based on Chapter 2, 'Thinking about canal irrigation,' in the book, *Managing canal irrigation* (Chambers 1988). The discussion focused on three major questions:

- * For what purpose do canal irrigation systems exist?
- * How should the performance of such systems be analyzed?
- * What is the nature of canal irrigation, its parts and processes?

A small group exercise helped the participants to reflect on their own irrigation schemes based on the concepts of domains, dimensions, linkages and activities developed by Chambers. They also discussed the complexity of their system and the dynamic changes they expected to see in the Besut and Kerian schemes in the near future. The managers from the Besut Scheme, for example, considered that the following changes could be expected:

- * Change in catchment area characteristics;

- * Development of the irrigation area;
- * Changes in agricultural practices;
- * Climatic changes; and
- * Labor migration.

The possible effects of labor and water shortage and environmental constraints, as consequences of increasing success in industrialization, which had earlier been drawn to the attention of participants by the Director of Irrigation of DID, were also discussed.

A CASE STUDY FROM CHINA

On the second day of the workshop, a case study on the *Identification of causes of poor performance of typical large-sized irrigation schemes in South China*, by Mao Zhi (Mao 1989), was presented and discussed.

The case study described a system of twelve techno-economic indices of irrigation system performance which had been applied before and after the rehabilitation of the Zhanghe Irrigation Scheme, which is the largest in Hubei Province in South China. Participants were asked to identify the indices which were most relevant to their own systems in Besut and Kerian, and to indicate how feasible it would be to compute the chosen indices from the data which were usually available to them, and to compare the observed with the design values. It was generally considered that the indices used by Mao Zhi were both useful and relevant to the Besut and Kerian schemes.

FRAMEWORKS FOR ASSESSING IRRIGATION PERFORMANCE

A comprehensive framework for conceptualizing irrigation performance (Small and Svendsen 1990) was presented and discussed. In summary, this framework provides a basis for more systematic comparative assessments of irrigation. It defines the irrigation system and its relationship to broader agricultural and socioeconomic systems. It shows how goals are crucial to performance assessments and describes the purposes of assessment, categories of performance, measures and standards.

The basic framework for performance-oriented management, devised by Murray-Rust and Snellen (Murray-Rust 1991), was also introduced, along with hypotheses for improving performance. The discussion helped to make participants aware that performance assessment cannot be focused only on the outputs of the system. Outputs are an integral part of such an assessment, but should be used to identify opportunities to improve the entire management of the organization.

DEVELOPING HYPOTHESES FOR IMPROVING IRRIGATION SYSTEM PERFORMANCE

The participants then attempted to select five hypotheses for improving irrigation system performance which would be particularly relevant and useful for the conditions in Besut and Kerian schemes. Among nineteen hypotheses provided by Murray-Rust and Snellen (Murray-Rust 1991), five were cited simultaneously by at least two groups, as follows:

1. Objectives must be simple and clearly expressed, and the responsibilities for achieving them clearly defined.
2. The transition from current practices to performance-oriented management will be difficult: it requires changes in planning, operations, and control in the institutional setting. The transition also requires patience and understanding to tolerate false starts and mistakes during this process.
3. Objectives must be based either on past experience from that system, or from systems facing similar design and management conditions, rather than on assumptions about what ought to be achieved.
4. Targets must be quantified to facilitate monitoring, and a set of standards developed to enable evaluation to be undertaken.
5. Each objective has to be transformed into a set of operational targets that match the responsibilities of each participant in the management process.

The results of this exercise were very satisfactory in terms of demonstrated awareness among the participants of the need for having clear organizational objectives, well-defined responsibilities and targets, and other fundamental elements for managing irrigation organizations.

Another text by Chambers, *The diagnostic analysis: Problems and approach* (Chambers 1988), was presented and discussed in this connection. The text emphasizes how difficult it is to conduct a diagnostic analysis because of the existence of multiple objectives and criteria and because of the complexity of the irrigation system itself. The author suggests several methods to facilitate diagnostic analysis, including rapid rural appraisal (RRA), deliberate planning for a flexible sequence of activities, and others. The discussion gave the participants a chance to share their own successes and failures in conducting diagnostic analyses and to learn from one another in this respect.

INDICATORS OF THE PERFORMANCE OF IRRIGATION SYSTEMS

Various indicators of the performance of irrigation systems, selected from the literature, were presented to allow the participants to identify those which could be relevant to the Besut and Kerian schemes. The indicators included those proposed by Mao Zhi, Molden and Gates, Abernethy, Bos and Nugeteren, and Garces (Rao 1991).

It was emphasized during the discussion that there is a common belief among researchers that indicators of irrigation performance should include:

- * Output indicators;
- * Indicators of the impact of the outputs; and
- * Indicators of the overall system effectiveness.

The results of the discussions are illustrated in the following list of indicators selected by the Kerian group for monitoring and evaluation purposes in the various domains:

- * Water : equity, efficiency, adequacy and dependability of water delivery;
- * Human : response capacity of the agency to farmers and farmers' satisfaction;
- * Environment : waterlogging, water quantity; and
- * Economics : productivity.

In the domain of water, for example, they selected the Molden and Gates proposal, which focuses on rates and volumes of water delivery for the performance of the system in detail. On the other hand, they would adopt the proposals by Bos and Nugeteren and Mao Zhi as providing the most widely accepted concepts and definitions of irrigation efficiencies.

Productivity was also mentioned as the indicator related to evaluating the economic performance of the system in Kerian, as suggested by Garces. It is assessed in terms of: area utilization; yield and output for unit of irrigation water.

This exercise was useful and produced relevant results. The participants assumed responsibility for discussing their chosen indicators with the entire staff of both schemes with a view to making them official indicators for systems performance evaluation in Besut and Kerian. A special follow-up program is to be developed by IIMI and DID to assist the managers of Besut and Kerian in the implementation of this performance evaluation program.

IRRIGATION SYSTEM PERFORMANCE AND SUSTAINABILITY

The issues of performance and sustainability were introduced through a chart showing the three main levels of management found in most irrigation enterprises, namely: management of personnel, management of maintenance and management of operation.

Regarding the management of personnel, the Senior Irrigation Management Specialist pointed out the needs of various levels of management, their respective functions, responsibilities which require appropriate knowledge, attitudes and skills. The importance of the arrangements made by an institution to provide its personnel with basic Human Resources Development (HRD) was also emphasized. The HRD assesses the staff's personal and professional needs and ways to satisfy such needs including provision of incentives, recognition, career development and so on, in order to motivate staff to work hard and be committed to achieving the goals of the organization.

The management of operation and maintenance of irrigation systems was discussed. Success in maintaining and operating irrigation systems results in increased productivity, increased yield and profitability, lower costs and higher performance; while failure provokes waterlogging, salinity and less acreage irrigated, deterioration of the system and its performance, needs for rehabilitation, and higher costs.

The discussion of these issues focused mainly on three questions:

- * How vulnerable is a system to destabilizing influences, threats and shock that can affect its performance?
- * How capable or resilient is the system and the management to cope with such influences, threats and shocks, and regain its normality and continue to perform well?
- * What are the foreseeable threats that the system should prepare to guard against?

The results of this discussion were very fruitful. The participants were able to discuss how to deal with unexpected problems and realized how vulnerable an irrigation system is and how visionary irrigation managers need to manage the system appropriately and skillfully, including anticipating problems and devising solutions.

MONITORING THE PERFORMANCE OF IRRIGATION SYSTEMS

The document *Operational guide to monitoring irrigation water management in India* (Operational guide 1987), developed in draft form for the National Water Management Project by the Agricultural Division of the India Department of the World Bank, was presented to introduce the participants to the issue of monitoring the performance of irrigation systems.

The four basic principles for a monitoring system were discussed. First, it should be internal to the water delivery system and fully integrated with the management of the scheme. Second, it should be integrated with the preparation and assessment of seasonal operational plans. Third, it should involve systematic data collection, analysis and reporting to both the hydraulic system and to staff accountable for planning and implementation; and finally, it should disseminate results in a public document.

Participants from the Besut and Kerian schemes worked in separate groups to design monitoring and evaluation plans suitable for their respective schemes. They were first required to consider the existing monitoring and evaluation process and organizational structure and identify: the elements of the monitoring system; the performance reports to be prepared; the centers of accountability; and the main criteria (or performance indicators) to be used in the performance assessment. In preparing an action plan for implementing their chosen monitoring and evaluation process, the participants were also asked to identify any additional organizational and resource requirements which might be required.

The results of this exercise were satisfactory. The action plans for the respective schemes were presented, discussed, and improved where necessary, during a plenary session. The exercise made participants more aware of the need for monitoring the systems to ensure that needed interventions were made in time to prevent failure of the operational plan and consequently, the system performance.

RESEARCH ISSUES RELEVANT TO THE BESUT AND KERIAN SCHEMES

The identification of research issues relevant to Besut and Kerian schemes was done through a modified nominal group technique. The groups identified and prioritized five research issues, resulting in a preliminary list of twenty four issues from all groups. These were again listed in order of priority, with the five most important issues being identified:

1. Assessment of data availability and needs for different performance indicators.
2. Looking into the development of practical control structures.
3. Operation and maintenance capacity.
4. Establishment of management models to assist in monitoring and evaluation.
5. System performance with respect to water distribution.

The Senior Irrigation Management Specialist closed this session providing a list of other issues which should be taken into consideration by the participants. These included: increasing interagency collaboration; increasing farmer participation in system management; equity in water distribution among compartments and among farmers (main system and tertiary system); input coordination problems from farmers'

perspectives, etc. In general, this exercise was very helpful in increasing the participants' understanding of problems for further investigation.

RESEARCH METHODOLOGIES AND RESEARCH PROPOSALS

The major steps in planning good research studies were presented and discussed. It was emphasized that the basic difficulty in planning a research study is identifying the problem which has given rise to the question to be investigated.

Basic methods of research were presented and discussed, and the case and field study methods, and action research were identified as being very effective and very much used for studies in irrigation management. The participants were then invited to draft a research proposal, which should contain the following elements:

- * A specific research objective;
- * A brief statement of the problem to be solved and the research questions to be addressed;
- * A set of hypotheses to be tested;
- * A defined research procedure or methodology;
- * Identification of the data to be collected;
- * Consideration of appropriate methods of analysis;
- * An indication of the likely impact of the research on system performance; and
- * Estimates of the resource requirements, time frame and budget for the research.

COLLABORATIVE RESEARCH IN IRRIGATION MANAGEMENT

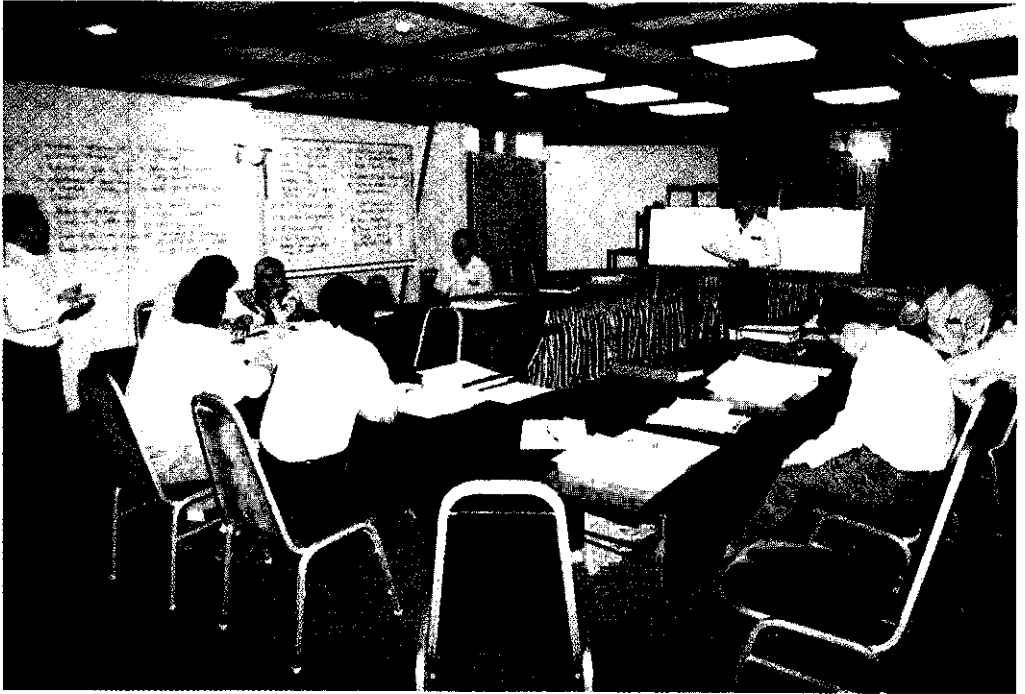
One of the objectives of the IIMI management training program in Malaysia was to sensitize irrigation managers in DID to the need to collaborate with researchers from universities and other research centers in investigating real irrigation management problems and finding practical solutions which would lead to the improvement of irrigation organization performance and the sustainability of irrigation systems in the country.

The workshop participants worked in small groups to design an action plan for conducting collaborative research with the Universiti Pertanian Malaysia (UPM). The discussions were facilitated by the presence of a professor from UPM who was able to discuss the advantages and disadvantages of the various proposals.

The following guidelines were provided to facilitate this exercise:

- * Define *one* clear objective of your effort to initiate a collaborative research with UPM;
- * List three actions you need to take to reach this objective;
- * List three major organizational conditions you need, to reach this objective;
- * List three problems which you anticipate, in developing this relationship with UPM to implement this collaborative research;
- * List three possible solutions to overcome these problems;
- * When do you plan to initiate this plan? Justify;
- * List three results that you can anticipate as a consequence of this action plan; and
- * How do you plan to measure the performance from these results?

This session contributed greatly to developing interest among the participants in collaborative research between DID and UPM, which will be undertaken as part of the DID and IIMI follow-up program.



Assessing research issues in irrigation management for Besut and Kerian schemes through the Nominal Group Technique.



Group discussion during the workshop on Research on the Performance of Irrigation Systems in Besut.

EVALUATION OF THE WORKSHOP

Two kinds of evaluation were employed to assess the effectiveness of the workshop.

Through process evaluation, the participants evaluated the process of self-development they had experienced during the workshop, including the extent to which they had increased their knowledge of interdisciplinary research in irrigation management, their willingness to overcome difficulties through investigation of systems problems, and so on.

A program evaluation was carried out at the end of the workshop to assess the extent to which its objectives had been achieved and to obtain the views of participants on the level of interest, motivation, participation and productivity of the group. This evaluation also assessed the strong and weak points of the individual sessions and sought participants' suggestions for the improvement of future programs of this kind.

The process evaluation showed that participants generally felt that they had gained a great deal from the workshop in terms of better understanding of the aims, problems and usefulness of research in irrigation management. On a scale of 1 to 10, participants assessed their overall level of knowledge at the end of the workshop as 7.8, compared with a level of only 4.3 when the workshop began—an improvement of 81 percent.

The program evaluation also showed that participants considered the objectives of the workshop to have been very well-achieved, with an overall average score of 4.0 on a scale from 1 to 5. The participants also had a positive view of the orientation, group atmosphere, interest and motivation, participation, productivity, physical arrangements and comfort, giving these aspects an overall average score of 4.24 on a scale of 1 to 5. The overall rating given to the workshop as a whole was also very good, at 4.23 on a scale of 1 to 5.

Strong points noted by the participants (in their own words) included the following:

Personally, I feel strongly the program objectives have been conveyed and understood. The knowledge and skill so acquired are very important to the irrigation engineer/manager.

Group discussions generate lots of ideas. [The participant from] UPM also helps a lot in discussions.

Contributed to broaden the outlook of the DID staff.

People directly involved in the field are participating. They are the people who are in touch with the ground.

Weak points included the following:

Longer time should be spent on the topic, Research Methodology and the presentation should be made easier to be understood. Anyway, a good effort has been made by the resource person in presenting the topics.

Program is too compact.

Probably lack of time for more thorough exercise.

Little idea on the program/content of the session before it started.

Times allocated for group discussion are considerably short. Voluminous notes may discourage reference later on.

There was inadequate time to digest all the topics given.

Suggestions for improvements included the following:

Group exercises should be carried out through brainstorming sessions in which more constructive ideas and suggestions can be contributed by the participants. As such, more time should be provided for carrying out the exercises.

Period of workshop should be longer.

Foreseeable constraints require anticipation by the relevant personnel/coordinator of workshop.

Follow-up of IIMI will be required.

CONCLUSION

By focusing on research on performance of irrigation systems, this workshop helped to develop within DID the final range of skills necessary for institutional development.

The increased awareness among the participants that irrigation managers should lead the way in developing research studies by identifying problems and working together with researchers from universities and other research centers to find appropriate solutions was considered the most important achievement of the workshop. However, the workshop also helped to increase understanding of the need to conduct research on irrigation management in order to strengthen training programs for the staff of irrigation systems. This helps to increase the relevance of the training program and the level of staff motivation, through developing skills with immediate practical application to real problems.

The importance of the link between research and training was subsequently confirmed by the Director General of DID during an interview on 2 October 1992, when he said:

I think that these two activities go hand in hand. Training development is dependent on availability and dissemination of updated information and materials on latest technology and performance. The recent workshop held in Besut for both the Kerian and Besut project staff would go a long way in sensitizing them to regard the dimension of research as a necessary ongoing activity under irrigation performance and management of projects. At any time, the irrigation manager needs to be aware of shortcomings and identify the need for research and subsequently take the initiative to address them through action taken in-house or through research institutions within the

country or outside. Only through these continuing efforts can one see positive results in the enhancement of irrigation performance of schemes.

Irrigation managers should lead the way in developing research studies by identifying problems and working together with researchers to find appropriate solutions.

PART VI

GENERAL ASSESSMENT

THE LAST PART of this book aims to provide a general assessment of the results of the entire program of management training for institutional development at the Department of Irrigation and Drainage (DID) in Malaysia. It also identifies the factors which influenced the results of the program, the major problems experienced and lessons learned, concluding with an assessment of the requirements for achieving sustainability of the program at DID in future.

CHAPTER 18

Assessment

INTRODUCTION

IN THE FOREGOING description of the management training and institutional development activities implemented at the Department of Irrigation and Drainage (DID) in Malaysia it has been tried to present a comprehensive story of a unique program which was carefully conducted to provide the organization with effective results.

In summary, the program was successfully completed in three distinct stages, which strengthened DID, first, in its management capacity, through the implementation of the series of training activities which compose the training cycle; second, in its capacity for strategic planning and the preparation of a human resources development plan; and third, in developing research capacity among the DID engineers to investigate irrigation performance problems and propose relevant solutions, specifically for the Besut and Kerian irrigation schemes.

It should be noted that, although the program was implemented within an elapsed time of three years, the activities at DID itself occupied a total time of only ninety-five days. The activities of planning and coordinating the program, producing training materials and writing reports, which were mainly carried out at IIMI headquarters, occupied additional time on the part of the Training Specialist. The Senior Irrigation Management Specialist also participated in all these activities, but the other consultants were only involved in the program in Malaysia. The total IIMI input in terms of staff time, including the Training Specialist and support staff, the Senior Irrigation Management Specialist and other consultants, may be estimated at about 240 person-days.

REVIEW OF RESULTS

Commenting on the results of the program at the conclusion of the field-level activities, the Director General of DID, Dato Ir. Haji Shahrizaila bin Abdullah, noted that, at the outset, it had been accepted that the need to strengthen irrigation management through training had been recognized worldwide. The objective of the collaborative program of training for institutional development at DID had been to strengthen national capacity by involving the entire management structure in the strategic planning process.

The Director General noted that, following the TNA, which had helped DID to assess training needs and organizational constraints, curricula had been designed, training materials produced and the training plan implemented by DID and other Malaysian trainers under the guidance of the IIMI training team. The objective of improving training capacity within DID had thus been attained. In addition, performance indicators had been identified and the link between research and training at the field level had been established. As for the impact on the staff involved in the program, the Director General noted that

People in fact have reported much progress in their own work areas in that they are in a better position to perform the job on the ground, and this has contributed significantly to human resources development in the organization.

Some of the staff who had participated in the various stages of the program were subsequently interviewed by one of the Malaysian trainers, and their comments generally reflected the Director General's views. A Technical Assistant commented that

This training is very useful in my job performance, especially interaction or communication between officers and officers or officers and farmers, and the people I have to work with. So there is an improvement in my job performance.

Another Technical Assistant said,

The course has made me feel more confident, motivated and open-minded and helps me to improve my job performance.

A Technician remarked that

The contents of the training itself helped me, the problem-solving skills, how to deal with the farmers in an appropriate way, how to identify the problems; [etc.,] and it created confidence in myself so that it has improved my performance.

Several participants commented that they had increased their self-confidence and improved their communication skills, especially in being more ready to listen to others. An Irrigation Inspector said that

All these years I thought that I am always right, but now I think I should listen to others.

Another Technician remarked,

I listen to others and don't take things for granted.

Such changes were not confined to the technical-level staff: a Deputy Project Director described the effect that participation in the program had on him in the following words:

The course is most useful in improving job performance because it gives me a sense of direction. ... Indeed, the course improved my job performance where I feel as if I am a part of the organization and feel my importance in being in the organization; and I have a task to carry out-a goal to achieve.

On a more personal level, this officer felt,

I am now more open and have time to listen to others to try to appreciate their problems. I feel that I am more caring and concerned for my family and my work.

Others also commented on the impact of the experience on their family life. A Technical Assistant remarked that

The course has helped me to be a good leader and a good manager in my family and work environment;

while a Technician said,

Now I am trying to adopt the proper way of managing my family and my job so that they will be more effective and properly managed to suit all the individuals.

Another Technical Assistant:

I feel that I can communicate better with my family and my staff and that I can openly discuss problems with them.

Improvements in behavior as a result of the program were not only noted by those who had taken part, but also by their superiors. The District Engineer of Besut remarked that, after his staff had attended the two-week training course there,

I found that there is a tremendous improvement in their job performance. ... The contents of their course and the guidance given by their facilitators have given them a new sense of direction ... they are more motivated now and have acquired some skills to motivate their subordinates ... The distinct differences I notice are that they exhibit more self-confidence, that they are able to communicate better, that they are able to participate in group discussions effectively and that they are more open-minded. ... They exhibit an interest to work harder, to perform harder as a team, which previously was absent. ... I found much to my astonishment how well they organize their workplan and how organized they are in getting work done from their field staff. I wish this had come earlier because this has helped the Department tremendously.

A Deputy Project Director commented that

This is the sort of training we need, and with this appropriate training we can maintain productivity.

With regard to those of his staff who had participated in the program, he said that

... you can see they are more concerned and responsive. They are more willing to work harder. When people are exposed to new things, when you update knowledge and skills and give ample support and a conducive environment, and an atmosphere of trust and self-confidence, then surely you can see the improvement in their job performance.

In the view of a Project Director,

My men have been exposed to a part of the training they have never been exposed to before, the human psychology side ... I feel it is a good avenue for them to know for themselves what they should do.... Training does not end with the impact on the field staff; it should be extended to all levels of staff in the district and especially to those in the office, the engineers and support staff, so that they are aware of what they need to do in the irrigation sector.

A similar view on the need to extend the training program to all staff was expressed by a State Director, who began by noting that

Managers sometimes fall into the trap of believing that the low-level workers cannot think through problems on their own. In reality, when they are away from the job they are otherwise; they find schools for their children, manage their budgets[, etc.]... After they have undergone the training ... I find that such qualities as participativeness, creativeness, self-confidence, willingness to work in teams, striving to work harder, commitment towards the organization and productivity, and working with initiative, have emerged from this. This course is having such an impact on my staff that I feel it should be extended towards the rest of the staff as soon as possible.

PROGRAM APPROACH AND METHODOLOGIES

In the light of these and other reactions to the program, both from those who took part and those who are affected by its results, the major conclusions with regard to the approach and methodologies adopted may be summarized as follows:

- * IIMI's management training approach, based on a well-defined plan, (the Training Cycle) facilitated interaction between IIMI and DID. It raised expectations and developed confidence and trust between the two organizations.

- * The initial approach to DID through training proved to be very effective. It did not pose any apparent threat to the organization, and the program was accordingly welcomed.
- * The action research model using the interactive exercise has proved to be an excellent approach to collect data, give feedback to the DID officials and assist them in designing action plans for further activities.
- * The assessment of training needs through interactive exercises, encouraging participation and frank analysis of the jobs of DID staff, was very effective. It developed understanding and awareness among the participants with regard to their responsibilities for improving the performance of irrigation systems.
- * The assessment of organizational constraints and suggestions by the DID staff on how to overcome them provided the DID decision makers with insights on how to address the problems to provide effective solutions.
- * The development of the in-house training capacity of DID through the training of trainers within the organization guaranteed the continuity of efforts to develop the DID staff in order to improve the performance of the organization.
- * The production of tailor-made training modules and training materials was a major factor in helping to establish and maintain the quality of training within DID.
- * The continued evaluation and improvement of the training materials, based upon feedback from the Malaysian trainers, gave them a feeling of ownership in respect of the materials and developed their commitment to the training program.
- * The assistance provided by IIMI during the implementation of the first training programs by the Malaysian trainers helped to develop seriousness and commitment among the trainers and the top management of DID.
- * The continuous process of evaluation during the program motivated participants and provided information for the improvement of the training program.
- * The frequent meetings designed to keep the top management informed about plans, implementation and evaluation of the activities, developed commitment and provided opportunities to discuss major problems of the organization and possible solutions, and influenced DID to implement activities such as strategic planning.
- * The strategic planning process provided opportunities for the managers to analyze and evaluate the needs of their organization and develop better understanding of the whole organization as a system of management.
- * The continuing implementation of the training activities has developed motivation and interest within the organization.

To summarize, the approach has shown that, to be successful, training has to be systematic and be a part of a human resources development plan which is supported by the managers of the organization. An effective human resources development plan in turn can only be developed through a strategic planning process which compels the organization to ensure that its goals and objectives are clearly defined and translated into operational activities which will promote skill development, better performance and commitment to achieving the final results among its staff.

FACTORS WHICH INFLUENCED THE RESULTS OF THE PROGRAM

The major positive factors which helped the program to achieve the expected results were as follows:

- * The interest, assistance and support of the top management of IIMI during all stages of the program promoted a positive response from DID to the idea of implementing all the activities in close collaboration with IIMI.
- * The interest and commitment of the top management and senior engineers in DID, who devoted a substantial amount of time in discussing plans, evaluating the results of the activities, making decisions on the next steps of the program and facilitating the implementation of the activities.
- * The extensive experience of IIMI in conducting research in irrigation management in partnership with agencies in several countries helped the DID personnel to develop confidence in IIMI's research results. Consequently, they became receptive to analyzing their own irrigation environment in the light of the IIMI research studies and to adopting some of the recommendations with the aim of improving irrigation performance in their own country.
- * The interest, commitment and devotion of the senior irrigation management specialists who conducted the activities. They always demonstrated their belief that the program would generate positive results and help ensure better performance of irrigation systems in Malaysia.
- * The visible commitment of the trainers of the organization who participated in all stages of the program.
- * The involvement in the program of the DID managers at all levels, which developed their motivation and commitment in respect of its results.

Finally it is important to emphasize that the country's external environment, which is promoting the increase in the quality of services within all organizations with the aim of making Malaysia an industrialised country by the year 2020 in accordance with the "Vision 2020" Program, has contributed immensely to the success of this program.

PROBLEMS AND DIFFICULTIES

Among the major problems and difficulties encountered in planning and implementing the program were: the uncertainty of being able to obtain financial support to conduct the planned activities of the program; the interruption of the program during 1990, which created feelings of disillusion among the DID management staff; and the limited degree of involvement in the program by IIMI researchers, which meant that the participants were able to benefit to only a very limited extent from the opportunity to discuss the IIMI research studies with their respective authors.

LESSONS LEARNED

The lessons learned from the implementation of the program included the following:

- * To be successful, management training for promoting institutional development must have support from the top management of the national organizations, who must devote sufficient time and effort to participate in it.
- * The involvement of national trainers as part of the training team develops deep sensitivity and understanding of the whole process, and great responsibility for the success of the program.
- * Research results are an invaluable contribution to strengthening the content of the training activities.
- * The discussion of research studies and their recommendations develops useful insights for the program participants to help them analyze their own environment, assess problems and propose possible solutions.
- * The action research model provides opportunities to investigate real problems and design immediate action plans to solve them and evaluate the real effects of these actions. This model builds a systematic and cumulative body of knowledge which can generate theories.
- * Interactive techniques are the best way of approaching management training activities. They promote understanding and friendship among the participants, and facilitate team building.
- * A systematic management training program brings the entire organization together. Managers from all levels develop interest in participating and in understanding the process of change that takes place.
- * The three stages of the management training for institutional development are effective to sensitize managers on the needs of (a) developing human resources

within the organization to strengthen the management capability; (b) defining an integrated and systematic approach to the management and coordination of the total range of activities for an agency; and (c) developing research skills to investigate problems and propose relevant solutions for the organization.

- * The training team responsible for planning and conducting such a program should be interdisciplinary and should involve experienced professionals in irrigation management and practitioners from national organizations.
- * To ensure sustainability of the program, the activities need to be continuously followed-up and evaluated with the leadership of the national organization.

Finally, it is relevant to emphasize that the major lesson learned from this program is that the process of institutional development must be recognized as a continuum in which all three stages of the program are very important, necessary and complementary.

The strategic plan and human resources development plan must be embodied in an official document to provide authoritative directions to the organization. Such a document provides an invaluable focus, facilitating participation and understanding, developing team building, and promoting motivation and commitment among the staff to achieve shared future-directed goals and objectives.

Training activities should be designed and conducted as an integral part of the human resources development plan, which aims to reach the personnel of the entire organization so as to facilitate the development of the skills required to improve performance and so to ensure the achievement of the organizational mission or goals.

ACHIEVING SUSTAINABILITY OF THE PROGRAM

The successful conclusion of this collaborative program for institutional development by DID and IIMI naturally gives rise to the question of how to achieve sustainability of the program in order to guarantee effective results in the irrigation systems in Malaysia.

To achieve this, it will be necessary for DID to continue to provide assistance to other irrigation systems in the country in defining appropriate objectives, strategies, activities and performance indicators, measures and standards, so as to ensure the dissemination of this process for the improvement of irrigation management in the country.

Specifically, this will mean that the top management and senior engineers of DID will need to support follow-up to the irrigation management activities in Besut and Kerian in the light of the strategic plan and human resources development plan designed in September 1992. This will include the systematic evaluation of the personnel and the irrigation systems of these two schemes, based upon the performance indicators, measures and standards defined by the managers and staff of both schemes. The top management and senior engineers of DID will need to continue to be strong supporters and to believe firmly in the benefits which these processes can provide.

It will also be necessary for DID to make explicit and adequate budgetary provision to cover the necessary expenses of its HRD programs, including management training

and training for development of research skills in irrigation management. In addition, DID will need to support the development of new curricula and the respective training modules and materials based upon the TNA results. This to ensure continuity in the development of personnel and to promote the continuing development of research in irrigation management in collaboration with universities and other research organizations in order to respond to the needs of the irrigation systems in the country.

Finally, it will be important for DID to disseminate the results of its experience with strategic planning and HRD, for institutional development to other irrigation organizations, both in Malaysia and abroad, through exchange programs for professional development, publications, networks, provision of international training, and so on.

CONCLUSION

It seems appropriate to leave the final word on this whole process of human resources development and strategic planning for institutional development in the Department of Irrigation and Drainage in Malaysia to its Director General, Dato Ir. Haji Shahrizaila bin Abdullah. Interviewed by the Senior Irrigation Management Specialist in Kuala Lumpur at the end of the final stage of the three-year program, the Director General said:

I must say that the three stages we have gone through so far in this collaborative program with IIMI have indeed brought about the total improvement to the management especially of irrigation areas; more important, it was also beneficial to developing a human resources development program for the organization as a whole.

Though the program was a structured process focused on irrigation management, the whole methodology and strategy is relevant to other areas as well. The Department being involved in more than just irrigation, that is, in functions like agricultural drainage, river and coastal engineering, I see the relevance of this exercise to these areas also. Through this continuing process, we could then develop an organization well-equipped to deal with all problems, building our own capacity, not only as planners and implementers, but also as managers who are well-trained and competent.

I see this program in a positive light, bearing in mind the need for institutional arrangements to ensure its sustainability, because such methodology must be carefully monitored and progressively evaluated. In this context, one has to recognize that change is necessary from time to time, and that if it is properly planned and executed, the chances of success will always be there. I think this is what the strategic planning and human resources development program is all about.

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