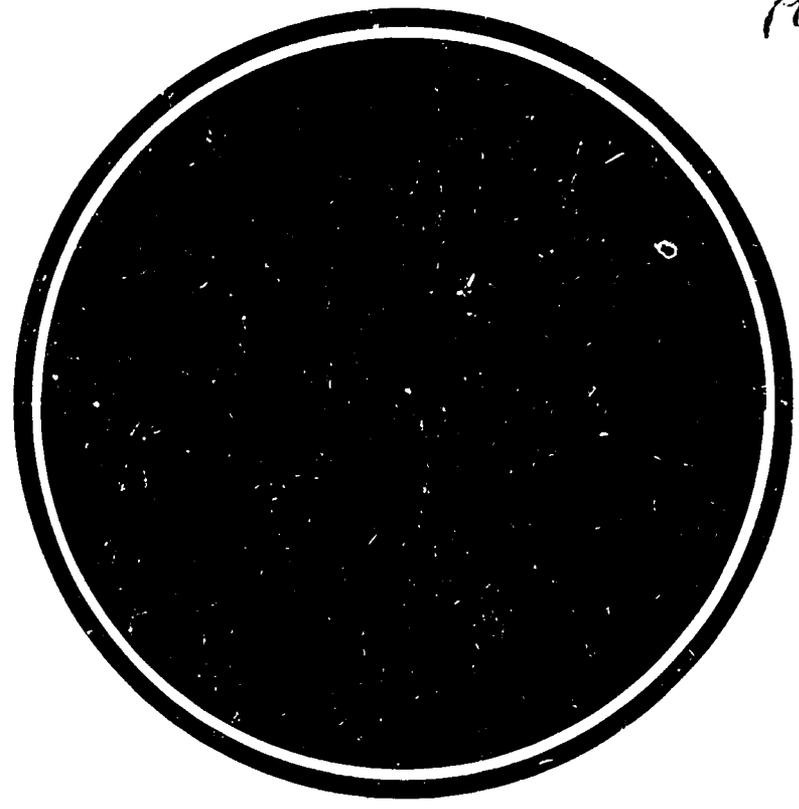


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Training Consultancy Report: Irrigation Management and Training Project



WATER MANAGEMENT SYNTHESIS PROJECT
WMS REPORT 31

**TRAINING CONSULTANCY REPORT:
IRRIGATION MANAGEMENT AND TRAINING PROJECT**

February 18 - March 11, 1984

Prepared by

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WMS Report No. 31

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WATER MANAGEMENT SYNTHESIS PROJECT

**University Services Center
Colorado State University
Fort Collins, Colorado**

**in cooperation with the
Consortium for International Development**

October 1984

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I. SUMMARY

The scope of work* called for the training consultant to:

- meet with the Central Water Commission (CWC), the World Bank and USAID officials to review the need for uniform training curricula and materials to flexibly meet state needs, and to report results of the consultancy and training experiences gained elsewhere;
- review existing curricula, materials and plans for training, as appropriate, in the three State Training Institutes (STI);
- review training materials and technical manuals from other countries to determine what can be used or adapted for use in India; and
- suggest a process involving management and participation principles to evolve a plan of action for STI's to develop curricula, written materials and training aids.

A detailed scope of work appears in Appendix A.

The consultancy followed three phases:

- initial discussions on background, history of STI's, review of the collected training materials and technical manuals, and preparation for the field visits;
- field visits to three states to meet with the key individuals involved in training, planning, and implementation; and attendance at the project orientation workshop in Maharashtra; and
- concluding discussions, reporting the results of the consultancy in a seminar, and preparation of the written report.

A list of most of the key individuals contacted and the itinerary followed during the consultancy are provided in Appendices B and C, respectively.

Field visits to the states in the process of forming a WALMI in Tamil Nadu and to the two functioning WALMI's in Maharashtra and Gujarat produced observations on personnel, philosophy of the group, the existing program, the curricula, the linkages of the WALMI to other complementary programs, the obvious complementarities of the experiential training (i.e., training that emphasizes practicing what is learned to achieve proficiency) and action research (i.e., research done inside or in full partnership with an implementing agency on operational performance), the existing materials, the facilities for training, the other sources of material and professional support for the WALMI, and general observations.

* Given that the consultancy was designed to last 4 to 5 weeks, the 3 weeks actually taken were not adequate for meeting all of the objectives.

The potential for a WALMI in Tamil Nadu appears to be great. Presently they are in the process of selecting a director and staff with complete disciplinary coverage and developing linkages between the academic and implementing agencies. Strong efforts will be required for this WALMI to identify and utilize the complementarities between training and research. WALMI in Maharashtra has had extraordinary success in achieving much in less than four years. Much of the initial success is due to the leadership and direction it has received, as well as the inputs of the World Bank. Efforts must be exerted to improve the training to make it more practical and suited to the needs of the action agencies in the field. Good opportunities exist for the linkage between research and training to be achieved under the leadership of WALMI. Linkages with academic institutions in IM&T Project are being developed. WALMI in Gujarat also has great potential. There is a need for larger, permanent facilities and for completing its core staff where sociology, extension and communications should be included. Training trainers and the international irrigation course will markedly assist in overcoming the institutional constraints. The staff will need to make a concerted effort to develop the training materials with a field action orientation. They are planning to begin action research in nearby irrigation systems to complement the experiential training. Action research, as in Maharashtra, will come under the WALMI and will be linked functionally with implementation agencies and a university.

A training development cycle is suggested as a process for the WALMI's to begin matching training objectives to the needs of the field programs. The steps in the process are as follows:

- Review job descriptions and performance standards;
- Revise job descriptions and performance standards;
- Conduct knowledge inventories and performance evaluations;
- Evaluate and rank needs and behavioral objectives;
- Assemble multidisciplinary team according to the course content;
- Develop framework, syllabus and lesson plans;
- Develop materials pairing disciplinary consultations;
- Conduct and evaluate the training;
- Visit and evaluate the training alumni on the job; and
- Repeat the steps above for the next course.

These steps and the related annual review and planning cycle incorporate important management elements. Especially important are the concepts of evaluation, feedback and review; the delegation of responsibility; and the new directions suggested in personnel management and evaluations. Participation was suggested on the part of the trainees in the course and trainer evaluation, as well as the concept of utilization of alumni as an important source of information in the development and analysis of courses conducted or to be conducted by the WALMI for the first time.

A review of available training materials and technical manuals from other programs provided one example for the IRMIC to emulate and one example to borrow, duplicate and improve on as time proceeds and more experience at the STI's is acquired. The major conclusion is that most good training materials are developed for specific purposes and specific programs. The goals and objectives of these programs may be different than those of the WALMI's training and action research functions. It is evident that IRMIC and

the STI's will have to develop materials related to the specific needs of India and the States. This will take time.

Several important activities in support of experiential training are listed and discussed along with a generalized timetable for their occurrence. These important activities are:

- Training trainers abroad;
- World irrigation course for senior officials;
- Work of the U.S. contractor;
- Specialized consulting services;
- Action research in support of experiential training;
- Annual review and planning workshop;
- Recognition and awards.

In conclusion, the Irrigation Management and Training Project of the Government of India has tremendous potential to make a long-term impact on irrigation, agriculture and command area development in the country. This process oriented project is the needed complement to the tremendous investments being made in irrigation and land development infrastructure. With the outputs of this project at full potential, and other training efforts assisted by the World Bank and other donors, India will be able to provide improved production possibilities to millions of farmers.

II. OBSERVATIONS FROM FIELD VISITS

A. Observations from Tamil Nadu (February 20-23, 1984)

Observations will be organized along the following ten topic headings: (1) Personnel, (2) Philosophy, (3) Program, (4) Curriculum, (5) Linkages, (6) Complementarities of research and training, (7) Materials (available and development capacity), (8) Training Facilities, (9) Support, and (10) General Observations.

(1) Personnel: Personnel visited were from Anna University and the Indian Institute of Management at Bangalore. These represented mostly engineers and management specialists, although professionals from agronomy and economics were represented in the discussions. Their institutions are committed to a formal agreement with the Public Works Department to form a State Training Institute (STI) under the Societies Act which provides flexibility in organization, selection of staff and staff incentives. These participating institutions in this consortium-type program need to define their manpower needs in specific subject specialities in terms of man-months per year for the STI as well as the Action Research Program (ARP). They are planning to coalesce these two entities in the state's training institution units under the same director. The STI and the ARP should be coexistent and have interchangeable staff both under the WALMI. This is because the roles of research and training are mutually supportive. A good trainer becomes a better trainer with appropriate action research experience. Likewise, the action researcher becomes a better researcher if he is forced to teach and face an inquisitive group of field-hardened trainees. It is extremely important for the Tamil Nadu WALMI to bring in regular full-time faculty members in rural sociology, agricultural extension and development communications along with agronomy, soils, engineering, and management disciplines.

(2) Philosophy: The Tamil Nadu group represented by the Anna University faculty and IIM Bangalore professors are highly technical academically. They will be most successful in their sponsorship of undergraduate and post-graduate degree programs in support of WALMI. Their initiatives in action research in tank irrigation modernization and their benchmark studies of farmer participation in tank management provide them with a head start in developing the STI and ARP--units with field laboratories to allow training of an experiential nature. These two academic institutions will need to forego theory to focus on the basics of the precise training needed by the action agencies (Irrigation, CADA and Agriculture) to improve irrigation management in the state.

(3) Program: The program is just now evolving in Tamil Nadu. The professionals realize that the program must be formalized; leadership must be selected along with a faculty before they begin developing a program of experiential training and action research.

(4) Curriculum: The curriculum does not yet exist for the WALMI in Tamil Nadu. A brief review of the post-graduate water management option in Civil Engineering offered at Anna University suggests that this program is useful for graduate students. However, it needs more focus on communication, extension and sociology if it is intended to be produce interdisciplinary degree-holders. With time and essential additions to the curriculum by

obtaining seconded staff from other universities, this post-graduate option can help to meet the professional water management needs of the state.

(5) Linkages: Linkages appear to be strong between the academic institutions. Stronger linkages need to be developed between them and the Irrigation and Agriculture departments. Deputation is ongoing thing with Anna University and Tamil Nadu Agricultural University (TNAU). This linkage can be important for bringing the necessary agricultural engineers into the Anna University program and into the WALMI to substantially strengthen the program's field and practical focus.

(6) Complementarities: Complementarities between research and training have not yet been developed. The potential for complementarity is substantial if the STI and ARP functions are placed under the same leadership and the staff assignments have dual functions. They could also be handled on rotation.

(7) Materials: Adequate materials for training, workshops and researchers do not yet exist. The IIM is ready to prepare case studies for training focusing on management. They will need to commit personnel to this activity for a considerable time. It appears that the IIM also has a sufficient cross-section of skills in economics, planning, rural development, education, systems analysis, water resources planning and management. They could develop good case studies for training system managers for use at the several WALMI's. A critical mass appears to be present in the IIMA Center of Agriculture and Rural Development. They should be able to commit time to accomplishing these goals. It should be emphasized that the training materials needed to support action programs such as the CADA need to be created for that specific task. Lectures from existing academic courses will not meet the needs of the program. In other countries lectures are a most frequent source of academic "excess baggage". In some countries this "excess baggage" has given some training programs a bad name, especially in the estimation of the trainees who have sat through many hours of dull lectures.

(8) Facilities: The temporary training facilities for WALMI have been arranged for, and a site has been selected for the permanent training institution. The consultant could not visit these during the brief four-day visit. One very encouraging possibility was seen on the Anna University campus, where a facility is being developed primarily to give agricultural and land development experiences on the engineering campus. Various crops, types of irrigation, land forming practices and patterns, and soil problems are demonstrable on this small, but adequate, one-to-two hectare site. This type of development, however, does not substitute for field training on "live" irrigation systems. It does, however, give exposure to civil engineers which is generally lacking in the undergraduate and post-graduate programs. Most of these engineers do not come from Indian agricultural or rural backgrounds.

(9) Support: Support from other organizations in irrigation management training and action research are on the horizon. In action research, the European Economic Community support for tank modernization is available. Likewise, the Swedish (SIDA) support for the Water Resource Center and training in Coimbatore at TNAU is a highly complementary effort to the WALMI program.

(10) General Observations: Opportunities appear to be great in Tamil Nadu. The present needs are: (1) formalization of WALMI, (2) identification

of leadership for WALMI, (3) identification and recruitment of the key disciplinary staff required by WALMI, and (4) improvement of the linkages between the academic institutions and the action agencies such as CADA, Irrigation and Agriculture. Strong effort will be required for the WALMI to identify the complementarities between experiential training and action research. Once identified, the ground rules and program must be built around the dual functions that can make the WALMI potentially very productive.

B. Observations From Maharashtra (February 27-29, 1984)

(1) Personnel: The personnel of WALMI Maharashtra appear to be highly motivated and capable. The personnel who were interviewed were mostly from the fields of engineering, agronomy and soils. During the visit it was not apparent who was the resident rural sociologist, extension educator or development communicator. A subsequently viewed listing of visiting faculty included several who covered these topics. It appears this WALMI is now robust enough that these professionals should be full-time faculty, or at least seconded for years at a time to provide continuity on these important subjects.

The personnel of WALMI were given a one-week, condensed version of a four-week course offered in New Delhi by the Institute of Secretariat Training and Management. Materials on training methods looked good under casual observation. One would have to ask how could a one-week course on training methods legitimately represent a four-week course and be useful, if the trainers are not forced to practice what they were taught in front of the professors and peers for critique and correction. This is an important in-service training method for the faculty of WALMI, but needs to be done in its entirety with appropriate applications to land and water management. Newly learned skills must be practiced by the trainers before return to regular duties.

(2) Philosophy: The faculty of the WALMI appear to have good esprit de corps and a positive attitude toward getting on with the work on the agenda. The philosophy of experiential training appears to have been well developed in the evolution of the WALMI program. The use of the long-term practicum in the field relating to the work of land development and design of tertiary facilities appears to be well suited to the needs of CADA personnel. The daily use of farm facilities on other topics is being further refined. A proper balance between classroom and field work is needed daily, otherwise the learning process will stagnate with too much classroom talk and too little doing or practicing the newly acquired skills.

(3) Program: The current program of WALMI appears to be limited to the long-term intensive courses for two groups of clients (according to their paper qualifications rather than their job requirements, per se) and to the short-term orientation courses for various groups of clients. Expansions in this program are planned for the near future. Undoubtedly the demand for WALMI services will expand faster than WALMI's ability to respond. Thus priorities will have to be assigned. Such decisions should favor quality of the training rather than quantity in terms of number of courses or number of trainees serviced. The choices need to favor the action programs of the state and take into account the natural strengths of the WALMI.

There appears to be a good opportunity for the WALMI to take on the role of action research simultaneously with its training function. As

mentioned earlier, the action research activity that constitutes the practicum for the long-term training program is a good precedent. As WALMI has reached a state of readiness that would allow the implementation of a continuous, action research program, this would allow the faculty and trainees to gain further experience in the field to complement their classroom expertise. Likewise the field practice can fit into the ongoing continuous action research program in a manner to accomplish the research goals at the same time.

(4) Curriculum: The curriculum heavily emphasizes sciences and advanced skills acquisition for the future (i.e. computer programming). Without an ability to see the actual training materials and to sit through a course, the observer lacks experience to judge if the treatment is theoretical, practical or some balance of the two. The balance between theoretical and practical needs to be made case-by-case according to the clients and the needs of the program that the WALMI training is servicing. Teaching notes and handouts need to be carefully designed for each audience. Peer review of the training materials and training methods in the classroom are approaches by which the curriculum can be improved. Panels of field supervisors of each category of each client group to be trained can be formed ad hoc for the purpose of reviewing the material taught and to learn what these supervisors want their employees to know. WALMI's experience of bringing in from the field each year some of its past graduates to get feedback on the course, what was applied in the field and what should be purged from the courses, is a highly laudable practice.

(5) Linkages: The links with irrigation and especially CADA appear to be in place. The linkage with the Mahatma Phule Agricultural University needs more development. Some of the WALMI faculty members appear to have made personal links. This was done through teaching, service on graduate committees, and service as thesis advisors for students at the university. One of the Indian Institutes of Management could have formal relationships with WALMI as does one or more of the engineering faculties.

(6) Complementarities: The complementary nature of the training and action research will need to be developed. Action research at this time is an artifact of the training practicum. This training practicum is perhaps one of the strongest components of the training program at WALMI.

(7) Materials: The WALMI materials viewed in the short visit appeared to have been carefully developed. However, this assessment was made only on the materials dealing with the land development. Materials were not available for the other more than twenty subjects offered in the intensive training programs. Lesson plans were not available at the time of the visit.

WALMI has a good human infrastructure of printing, drafting and stenographic services available. A special cell was recently established for the purpose of training material development. It appears that the first item on the agenda of the cell will be the production of a book on the training materials from the intensive course. For WALMI to reach full efficiency and effectiveness, this cell will need to catch up with the first three and a half years of technical material development. Technicians with specialization in the production of audio-visual materials will be required for the cell. This would require photographers, draftsmen, artists, and other media specialists.

(8) Facilities: WALMI has a modern physical plant partially in place and the remainder of its impressive main building program will be finished in 1984. The development of field buildings, outdoor hydraulics laboratory, field plots, and other facilities are in progress. One storage tank and one percolation tank is in place and a third tank is being constructed. These water storage facilities allow the conduct of the field exercises on the campus. The faculty will need to exert further imagination to devise exercises to accompany every classroom topic covered in the courses. Other opportunities for demonstration of crops not normally grown at the site are possible through the irrigation available on the farm. One possibility is the location of a rice garden in one hectare of land below the percolation tank. This would fill the dual role of providing a continuous supply of rice for consumption on the station as well as a continuous demonstration of all of the rice growth stages simultaneously in close proximity for the purposes of conducting very short-term training (one to two weeks) on rice production as an example. Further examples will have to come from the faculty, but any facility must be appropriate to the ongoing courses of WALMI.

(9) Support: Support from other sources has come primarily from the IBRD. WALMI was started through full support of the World Bank under a loan agreement for training. From the beginning, WALMI has had the services of two World Bank consultants in setting up the institute and for conducting courses. This substantial support is in part responsible for the rapid development of WALMI to the level of effectiveness that it has reached in less than four years. Recently, WALMI has had the support of Ford Foundation for a workshop and Water Management Synthesis for a short course on irrigation scheduling.

It is expected that the material and moral support of the World Bank will continue and that USAID's Irrigation Management and Training Project will be entirely complementary but heavily focused on human resources enhancement and training materials development which go with the building and field facilities development previously completed.

(10) General Observations: Maharashtra's WALMI has had an extraordinary success in getting started in less than four years. Much of this initial success is undoubtedly due to the direction and leadership that it has received. This favorable atmosphere for development of the institute is one that the other states should study. This means study the administration of WALMI, not just the physical facilities.

Phase II of WALMI's development is achieving effectiveness in terms of trainee performance in meeting specific job requirements; and in terms of faculty being prepared to adjust from the traditional academic method of teaching to more appropriate methods for the materials and for the client-trainee's position and experience in the hierarchy, the practical skills to be attained by the clients, the attitudinal changes required for them to have a positive attitude about their jobs, the behavioral changes required to accomplish their jobs, and, ultimately, for irrigation management in Maharashtra to be upgraded and the output from irrigated agriculture to be increased.

C. Observations from Gujarat (March 1-3, 1984)

(1) Personnel: The core technical personnel of the WALMI of Gujarat are mostly newly assigned and without prior experience in experiential

training linked with action research. They cover the areas of engineering, soils, land development, agronomy, and statistics. The WALMI lacks a development communication specialist, an extension educator, a rural sociologist and an agricultural economist. These additional staff are urgently needed even if provided by secondment from an academic institution nearby. The personnel already present appear to be dedicated and willing to expand their horizons, particularly in the program for training trainers that is coming up in the last half of 1984 at Colorado State University.

(2) Philosophy: The WALMI appears to be drifting with a great measure of uncertainty surrounding the status of the institute within the Department of Irrigation and the lack of a permanent site. There is a strong need to combine action research with experiential training (through practice) outside the classroom. If circumstances were to permit a separate society organization status and the assignment to a permanent facility and the secondment of a permanent or semi-permanent staff in the required disciplines, these matters would materially improve the output and outlook for WALMI.

(3) Program: The program has tremendous possibilities when the personnel of the M.S. University at Baroda and the Indian Institute of Management at Ahmedabad are integrated in a well defined role. During the brief visit to WALMI Gujarat, the director was able to invite a number of key individuals from academia and from the Irrigation, CADA and Agriculture Departments. These individuals were quite outspoken in their statements of what was needed in the field. In fact, one participant - a senior superintending engineer - was, in a matter of minutes, able to outline the job description of a karkoon under the current reality of irrigation development. This encounter is the type of stimulating interchange needed by the WALMI every year, for every category of person trained, and for every type of training course held. This need could be filled by advisory panels consisting of people from the field (Irrigation, CADA, and Agriculture Agencies) telling WALMI what their people need to know as essential inputs to the course and curriculum development.

(4) Curriculum: The curriculum needs focus on field problems existing within the experience of the operating agencies. The curriculum appears to be too academic. For instance, field workers don't need to know twelve different ways of predicting potential evapotranspiration for a reference crop. They only need to know how to use the reference information presented to them in practical irrigation scheduling. The course materials are more like those used for post-graduate courses in a university. There needs to be a concern for where the trainees are coming from or what they really need to know for use in the field. A careful definition of the jobs to be accomplished by the trainees as well as what they really need to know to successfully fulfill their jobs requires critical needs analysis. Using select panels of practitioners from the field will help immeasurably in the definition of these needs.

(5) Linkages: The linkages appear from meetings held during the visit to be present but should be more fully used. The Center for Management in Agriculture of IIM Ahmedabad and the Civil Engineering Department of the M.S. University of Baroda appear to be ready to collaborate to support WALMI. A linkage with a College of Agriculture appears to be a real need. Post-graduate training at MSU Baroda and IIM Ahmedabad appears to be very supportive of WALMI's long run objectives by increasing the cadre of trained professionals in irrigation water management.

(6) Complementarities: Complementarities between training and action research are needed. The consultant asked to be taken to the nearest irrigation projects to Gandhinagar, rather than to the showcase project, Mahi-Kadana, simply to determine what opportunities existed in WALMI's backyard. Within 10 kilometers and just seven minutes from the Circuit House after crossing the Bombay to Delhi highway, an irrigation tubewell project and private tubewells were encountered. Two projects were visited both of which were centered less than one hour and about 50 to 60 kilometers from WALMI headquarters. The WATRAK Reservoir Project represents a system undergoing modernization, where comparative research on the various intensities of terminal facilities and action research on farmer participation could well be accomplished in an interactive research-cum-training mode. Also visited was an old system, the Hathmatic Project, which was perennially short on water. Action research on management of minors by the farmer groups as well as comparison of management strategies in conjunctive use are both areas of possible beneficial research. Both types of research at both of the sites suggested above would be beneficial to the WALMI faculty, the WALMI trainees, the WALMI curriculum and to the Irrigation Department, Agriculture Department and farmers in the long run.

(7) Training Materials: The collection of training materials reviewed during the visit indicated a collection of diverse handout materials from many authors. There are no lesson plans, no common formats and very few behavioral objectives in the lessons. The WALMI has the capability within the years of experience of its faculty to produce quality training materials. Just the time and effort and direction are needed to make them a reality. The core faculty has the support of a drafting, mapping, printing and library section to assist in the production of training materials needed in the state.

(8) Facilities: The present inadequate facilities are a converted elementary school. They are not slated to be made final until a site is chosen at Gandhinagar. Selection of a permanent site will help to settle things for WALMI. In the meantime, training should be moved out of the classrooms to nearby irrigation systems making these systems the classrooms and the learning labs for the experiential training on the skills actually needed in CADA, Irrigation and Agriculture Departments.

(9) Support: Support from other sources has been largely that given in substantial measure to WALMI by the World Bank. Those efforts and the support of the IM&T Project are largely complementary. These complementarities should be expanded and built upon over time for WALMI to reach its full potential.

10) General Observations: The WALMI in Gujarat has great potential. Effort needs to be made to bring the potential to reality. The training of trainers and world irrigation course for senior officials are especially important to overcoming the institutional constraints. Concerted effort will be required to move the training out of the classroom, to remove academic "excess baggage", and to properly link the experiential training with the action research. This is a major next step for this WALMI.

III. ACTION PLAN FOR TRAINING DEVELOPMENT AND IMPROVEMENT

Given the brief visits to two State Training Institutes and discussions with key individuals involved with planning for training in the third state, the following section outlines a suggested action plan for the development and improvement of curricula, training materials and visual aids. The action plan closely follows the training development cycle depicted in Figure 1. The concept of a process as a cycle is predicated on the inclusion of periodic review and the repeated iteration over a number of steps to result in cumulative improvement over time. The nine-step process is suggested as an action agenda for the State Training Institutes.

A. Job Descriptions and Performance Standards

STEP I

Review the current state of expected and actual job performance. The first step in the training development process is the review of current job descriptions and performance standards. Current conditions of administrative procedure apparently do not provide for specific or concise job descriptions for individual positions in the hierarchy of the Irrigation or Agriculture Department. A review of the Government of Gujarat, Public Works Department Manual, Volume I - Orders (second edition) 1983, indicates very general job descriptions for the positions from Chief Engineer down to Sub-Divisional Officer, mostly emphasizing limits of power and area of responsibility rather than specific duties and responsibilities that would constitute a normal job specification. As a first step in training development, the training development team needs to review and assess the current job requirements from the point of view of the supervisor of next higher rank and the view of the person himself. These two categories are the key informants for the job position under scrutiny. Careful delineation of job specification need only consider the particular functions to be performed under the action program being implemented in the field for which the STI is providing training. The other responsibilities related to more mundane matters of management and personnel administration need not be fully specified at the initial stage of development. This specification of the job requirement by each of the hierarchical positions in the particular branch to which the individual is assigned, whether in command area development, construction, operation and maintenance, planning, monitoring, investigation or design will have to be taken into account, as shown in Figure 2. The figure depicts the relative proportions of trainees involved in water and land management who will ultimately become clients for the WALMI's. Each state of India will have a different mix of individuals to be trained based on their function in the overall program.

Having a job description is like having a road map and destination before starting a journey. Once a destination is established, then the selection of the steps required to move to the terminus becomes a straightforward matter. On the other hand, "If you have an unknown destination, you are certainly likely to reach there." Along with the job description go performance standards and methods, plus rewards and sanctions. If persons do not have a knowledge of their job, of the performance standards against which they are to be evaluated, and the possible outcomes as rewards and sanctions for performance or non-performance, then they are not likely to accomplish much of use to the program or assignment.

TRAINING DEVELOPMENT CYCLE

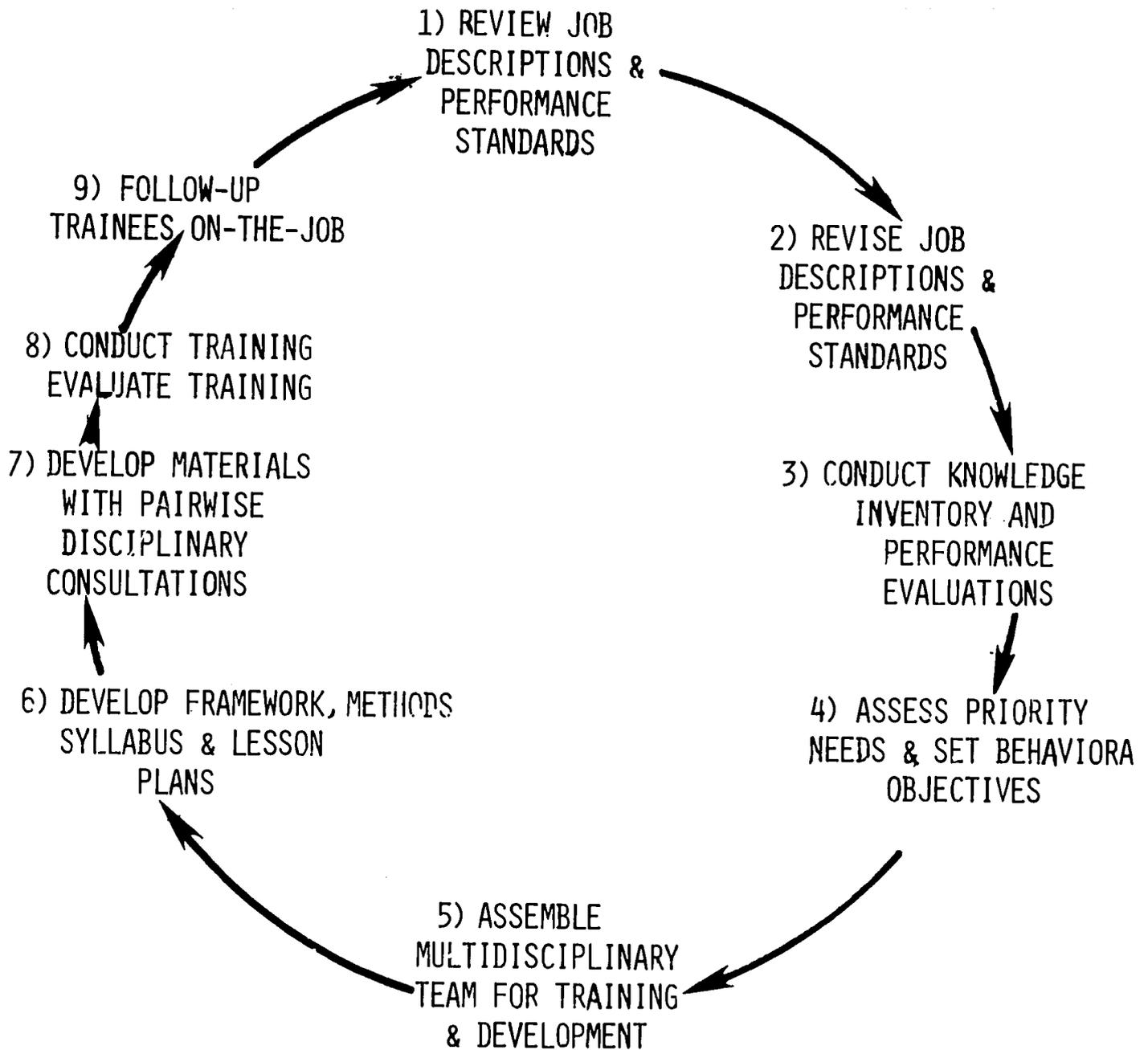
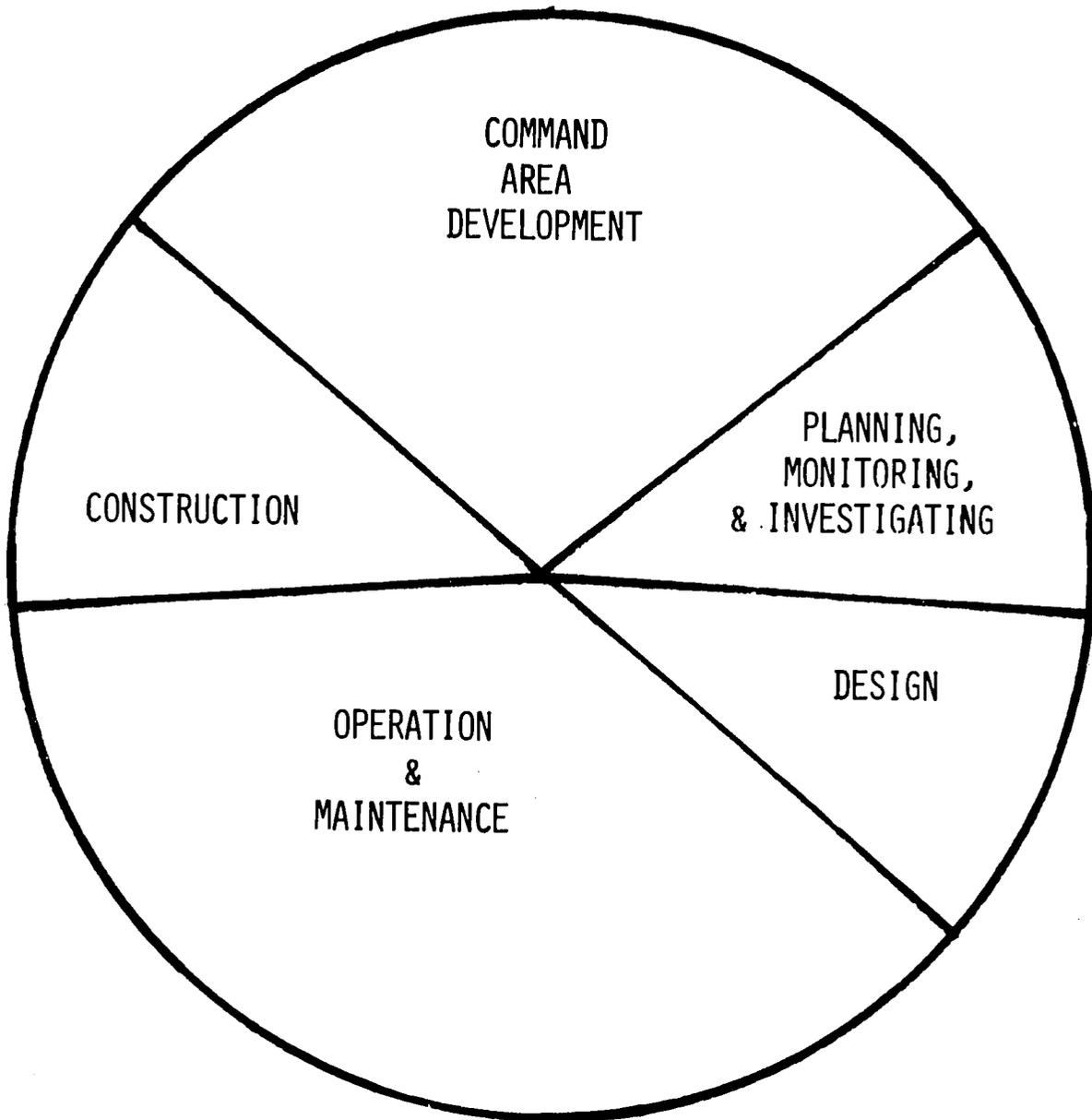


Figure 1.

WATER AND LAND MANAGEMENT TRAINING PERSPECTIVE*



*AREAS REPRESENT HYPOTHETICAL RELATIVE PROPORTIONS OF CLIENTS REQUIRING TRAINING, ACCORDING TO JOB TYPE IN LAND AND WATER MANAGEMENT.

Figure 2.

STEP II

Revise job descriptions and performance standards. Once the information is available on the state of the job description and current performance of people on the job is known, then a cross-section of key informants can be consulted on a job position-by-position to review the job description in the light of current practice and the needs of new action programs in land and water management. This consultative process should include persons in the job under review as well as supervisors of this position. This participation allows the current holders of the job to relate the current realities of the work required as well as those views and expectations from a supervisor's viewpoint. The supervisor has a concern for program implementation and the advantage of having been in that position previously and through promotion from the ranks.

The object of training can be to impart a detailed knowledge, an awareness of a general nature, and specific practical skills to be used on the job; to cause an attitudinal change that affects job performance and program implementation; and to cause behavioral changes for the benefit of the implementation program. The resultant outcomes of this participatory, consultative process among the training development team, the supervisors and the representative of the client-trainee group are three-fold:

1) A sharper, more closely focused job description for the position and a carefully defined matrix. (What the clients need to know? What do they need to be aware of in a general way? What do they need to be able to practice in the field performance? What attitudinal changes do they need to undergo? What behavioral changes do they need to experience on the job?) A sample matrix in very general terms is shown in Figure 3. Please note that the topics are not crop science, soil science, engineering, sociology, and economics. The topics are real world problems without the artificial boundaries imposed by academic training. Night irrigation behavior is a common ground for the engineer as well as the sociologist and should be considered, designed and delivered by these two as a team. The same is true with each of the other topics chosen. Each should be delivered by a team. Likewise, the information needed on each of the topics will vary according to the client and to the position in the organization that he is filling. If he is an executive engineer, he may need to know about night irrigation behavior if he works in Operations and Maintenance (O & M) and Command Area Development Authority (CADA), but may not need to know about these if he works in construction or design. This matrix of best estimates is precisely that, best estimates of the combined experience of the development team, the supervisors, and the representatives of the client-trainee group. The best estimates will undoubtedly improve with repetition of the process.

2) The implementation of a participatory-management process in the organization. This works for the benefit of the program, when individuals are given a say in the job that they are to perform as well as in the design of the training that will make them more effective in performing their job.

3) The provision of an opportunity for the development of objective performance standards and procedures for the evaluations that are to be applied on the job. With performance standards, tools for evaluation, annual evaluations and rewards and sanctions for performance or lack of performance,

MATRIX OF BEST ESTIMATES OF
"WHAT DO THE CLIENTS NEED TO KNOW?"

	CLIENT CATEGORY/POSITION EXECUTIVE ENGINEER			
	<u>O & M</u>	<u>CADA</u>	<u>CONST.</u>	<u>DESIGN</u>
NIGHT IRRIGATION BEHAVIOR	X	X		
ROTATIONAL WATER SUPPLY	X			
IRRIGATION SCHEDULING	X			
LAND LEVELLING		X	X	X
WATERCOURSE IMPROVEMENT		X	X	X
FARMER PARTICIPATION	X	X		
MAIN SYSTEM MANAGEMENT	X			

Figure 3.

and feedback to the employee, then the picture for more reliable personnel management is complete.

B. Knowledge and Practice Inventory and Assessment of Critical Needs

STEP III

Knowledge and skills inventory: Once the needs are determined, then the current state of detailed knowledge, general awareness, skills practiced, actual attitudes and job behavior are inventoried. This is accomplished primarily through interviews, questionnaires and observation of the individuals on the job. The development of these instruments and the recording of performance are steps that require careful consideration for content and format. The specific detailed knowledge, general awareness, and actual skills that can be performed on the job are directly approached with questions. The determination of attitudes, however, must be carefully accomplished to be comparable from place to place and program to program. The recording of behavior on the job in a time and motion sense is often obstructed by the presence of observers. The attitudes that are held and the behavior that results are difficult matters to ascertain. One approach is to answer the following questions: What do the clients currently have in detailed knowledge about some topic to be covered by the training? What matters are they currently generally aware of? What are the skills that they practice on the job and how well do they perform those skills? What are their key attitudes as they affect job performance? What are the important behavior patterns as they affect job performance?

STEP IV

Assessment of priority needs: The needs for training become the difference between the job specification or what they need to know and their practice. Also there is a need to ascertain key attitudes and behavior on the job to determine what they need to know, practice, and feel about on the job. This is compared with where they are now in terms of skills, behaviors, and attitudes. This is expressed as a simple equation in Figure 4. What they need to know and to be able to practice minus what they already know and are able to practice equals the appropriate behavioral objectives for training. In the early stages, the needs may far exceed the ability of the training program to respond. In this case, the needs that are assessed in this process will have to be prioritized. Those items that are most important to the accomplishment of program objectives will be taken as the priority program needs for early inclusion in the training. Setting priorities on the objectives further indicates that the training is recursive (i.e. repeated occasionally).

The form of objective that states what the client-trainee will be able to accomplish at the end of the course is known as a behavioral objective. It is represented as for example:

"At the end of this course the trainee will be able to:

- display his knowledge (by passing an examination)
- cite his awareness (verbal examination)

EQUATION DEFINING BEHAVIORAL OBJECTIVES

1) JOB DESCRIPTION SPECIFICATION = WHAT THEY NEED TO KNOW AND TO BE ABLE TO PRACTICE

MINUS

2) KNOWLEDGE AND SKILLS INVENTORY = WHAT THEY KNOW AND ARE ABLE TO PRACTICE

EQUALS

3) PRIORITY NEEDS ASSESSMENT = BEHAVIORAL TRAINING OBJECTIVES

Figure 4.

- practice certain specific skills (demonstrate in practical exam)
- indicate newly acquired attitudes (analytical interview)
- perform in certain behavior patterns (followed up on the job)."

These general behavioral objectives become the starting point for specific objectives in the lesson planning activity later in the process.

C. Development of Training Courses

The next series of three steps constitutes the development of a course to meet specific priority needs. These steps are the assembly of a training staff with backgrounds and specializations consistent with and according to the priority needs, the development of the training framework, process and syllabus and lesson plans, and the development of materials, field exercises with pairwise consultations among relevant disciplines.

STEP V

Assemble multidisciplinary team of trainers. The priority needs of training will indicate the key trainer disciplines required to conduct the course. Often the emphasis will be on the more technical disciplines of engineering, soils, and agronomy because of the nature of the field problems and the bias of the persons conducting the skills inventory and the needs assessment. In almost all cases the role of the sociologist, the communicator and the extension educator will be overlooked. This is due to insensitivity to the questions of human behavior and motivations as well as the principles of management which are required by the officers who are implementing the program. Thus the assembly of the trainer team for course development and delivery and ultimately evaluation must, by necessity, be broad. Exclusion of one of the key disciplines would be more the exception than the rule. This is particularly true when one of the additional requirements of the program implementation agency is monitoring and evaluation.

Training is an art that requires the accumulation of certain skills over time. Likewise the development of relationships between trainers of the multidisciplinary team must grow with time and evolve as a result of shared experiences. Team behavior must be predictable for the team to act successfully in concert. Considerable effort is required on the part of trainers to seek the common ground on which interdisciplinary team teaching can be successfully performed. Trainers build these relationships over time by reaching a mutual understanding in the training as well as in the conduct of action research. These relationships require nurturing. Give and take and considerable effort on the part of individuals to speak the language of the other discipline are essential. This development of interdisciplinary communication results in a common language among all the training disciplines and ultimately provides for improved understanding on the part of the client-trainees. A time should come when all of the program is offered in the "common land and water management language."

STEP VI

Develop framework, methods, syllabus and lesson plans. Once the trainers have been assembled and appraised of the priority training needs,

then begins the process of development of the course in broad terms. This begins with the placement of the training within the framework of the state water and land management training activities with respect to the function of the client stratum: Construction, design, operations and maintenance, CADA, monitoring, planning and investigations. This would be likened to placement of the course in the perspective diagram of Figure 2. At this point, the framework for the training takes shape with the translation of the general needs into specific behavioral objectives. These specific behavioral objectives are given structure by the development of a outline of training content. When this general outline is made more detailed, it becomes the course syllabus. The course syllabus is then divided into packages or lessons that can be accomplished within a given period of time, perhaps half a day.

The training development team must now take the specific lesson titles and develop objectives, materials list, site requirements, duration or time requirement, the output expected and other pertinent items into lesson plans. A simple example of a lesson plan for a field exercise on water measurement is shown in Figure 5. This simple structure and the discipline to accomplish it in every case for every lesson provides the training development team with an invaluable structured aid for the preparation of the training materials and for determining the training methods to be used in the following steps.

The objectives translated into lesson plans will provide indications of the methods that are most appropriate for the subject matter at hand. Clearly, if the experiential approach is to be used in the training, the client-trainees will be forced to practice the newly acquired skills during the training to assure proficiency before the training is over. If the training is focused on design of irrigation and land development, the trainees should get actual design experience. If the focus is land development they should experience and practice land development. If the focus is irrigation management they should practice operations and maintenance skills before leaving the course.

STEP VII

Develop the training materials with pairwise consultations. The lesson plans provide the detailed structure of the material that is to be prepared. The actual writing of the training materials should be done by individuals in consultation with other disciplinary members as the material or subject matter requires. If the subject is a management topic to be handled by the management specialist on the team, then that specialist should develop those materials in paired consultation with the engineer, with the agronomist, with the soil scientist, with the extension specialist, with the rural sociologist, and with the agricultural economist on the team. This pair-disciplinary consultation is shown in Figure 6. The same principle applies in reverse for all other members on the team so that a complete network of consultations appears as in Figure 7. This process may seem cumbersome in the beginning. But with experience and realization that farmers problems or the problems in land development in the field are never as simple as may be handled by one discipline, the process of interdisciplinary consultations will become very natural behavior for the members of the training team.

At this stage the communication specialist is consulted for the development of training aids and devices for the enhancement of the understanding of the material by the clients. The old adage that a picture is worth a thousand words is very appropriate in this situation and the work

LESSON PLANNING EXAMPLE

- TITLE: FIELD WATER MEASUREMENT
- OBJECTIVES: AT THE END OF THIS LESSON THE TRAINEE WILL BE ABLE TO:
- 1) CITE SEVERAL PRACTICAL METHODS OF MEASURING IRRIGATION WATER
 - 2) MEASURE WATER WITH AT LEAST 3 OF THE AVAILABLE DEVICES, INCLUDING INSTALLATION OF THE DEVICE, AND
 - 3) COMPARE MEASUREMENT RESULTS, PRACTICAL DIFFICULTIES AND ADVANTAGES OF EACH METHOD USED.
- MATERIALS: CALIBRATION CHARTS, ORIFICE PLATE, V-NOTCH WEIR, PARSHALL FLUME, CUTTHROAT FLUME, BROAD-CRESTED WEIR AND CORRESPONDING INSTRUCTIONS AND PRECAUTIONS.
- SITE: FIELD CHANNEL WITH STEADY, UNIFORM FLOW.
- DURATION: 3 HOURS.
- OUTPUT: SIMPLE TABLE WITH REPLICATIONS, MEANS, VARIANCE AND COEFFICIENT OF VARIATION, DIFFICULTIES AND ADVANTAGES OF EACH METHOD USED.

Figure 5.

PAIRWISE DISCIPLINARY CONSULTATIONS

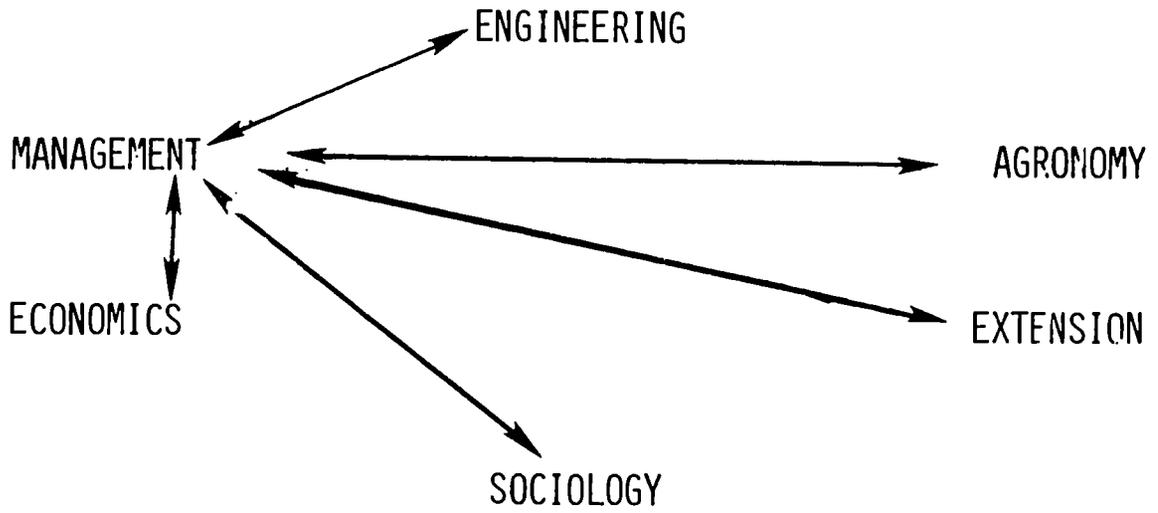
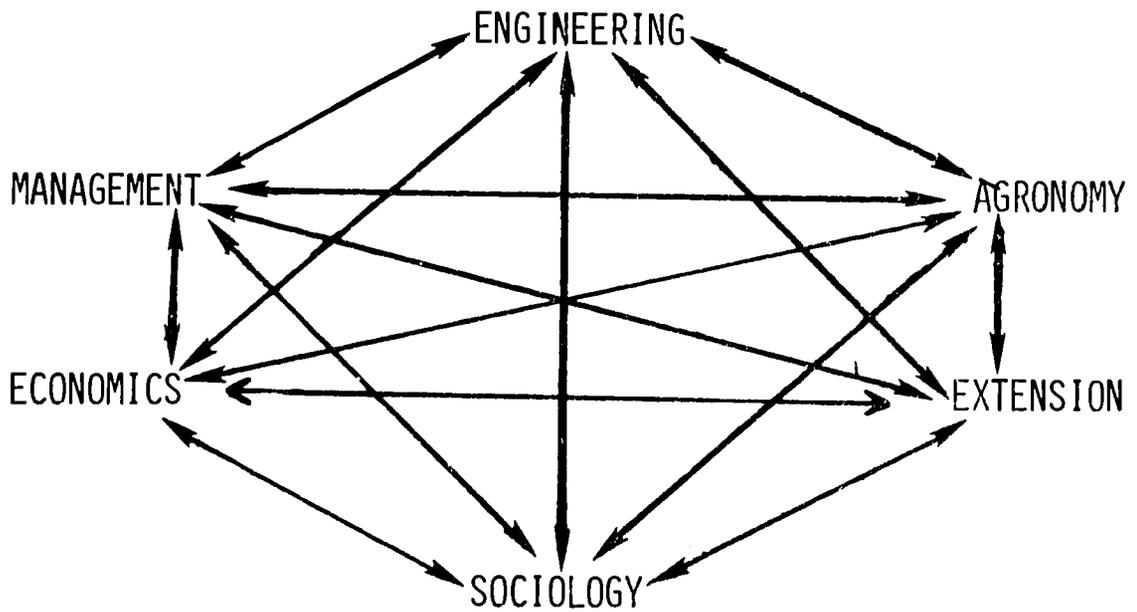


Figure 6.



of a communication specialist is essential for the success of the program. In these training programs many good slide sets, filmstrips, movies, and videos can play a useful role in making training interesting and useful.

STEP VIII

Training implementation. The real test of training development comes in the implementation of the training program. The course begins with a benchmark assessment of knowledge, skills, attitudes, and behavior. The program should attempt to schedule field work outside the classroom every day. This is to attempt to balance activity with inactivity. Attempts should be made to minimize theory with the major focus on practice. Remember the professionals in the course are not pursuing an advanced degree. They are seeking something useful to take back to their jobs that will make them more effective in completing their tasks. Periodic evaluation of the training should be done during the training period at least weekly. This allows the material to remain fresh in the minds of the trainees. Also the value of the material and the quality of the presentations can readily be evaluated. Evaluation represents a two-edged sword. The course and the presentation of the topic by the trainer-facilitator should be evaluated, both by trainees (who are to remain anonymous to allow constructive criticism without fear of retribution) and by training staff peers. The trainees should be evaluated on verbal skills, on written knowledge assimilation, on practical skills performed and on attitudinal changes which have begun to manifest themselves over time. At the end of the course, a general examination should be used to assess the ability of the trainee to relate all of the material into one package. This synthesis of the material is a step that not all of the trainees will be able to accomplish.

Certificates should be graded according to several categories of performance, such as excellence, satisfactory, passed or gold medal, first division, second division, etc. This grading of the certificates provides additional incentives for the trainees to do well in the course because the course certificate and the report made to the supervisor will carry these marks and become a permanent part of the employee's personnel file.

STEP IX

Follow-up trainees on the job: Every trainer should have a list of the previous trainees and their current field assignment. Using this list they are able to follow-up on the alumni in their respective field positions while they are on ordinary field inspections and on their action research assignments. Follow-up should be systematic to the extent possible, so that at least a certain threshold percentage of past trainees are seen, observed and interviewed every year. A certain percentage of trainees should be invited back to campus each year for the anniversary celebrations as is the practice of WALMI Maharashtra to participate in the ongoing dialogue on the training course content and evaluation of the training methods used. The results of the evaluations then feed directly back into the training development process.

The entire training development cycle is then repeated each time that the course is offered. This results in a cumulative improvement of the course over time, with the judicious incorporation of the results of the training evaluation and allowance for changing conditions in the field and policies of

evaluation are listed in Appendix F. These questions can, when addressed by the training development team, assist them in the evaluation of the overall course experience.

Several key concepts from training experiences in many countries have been drawn together in Appendix G. This tentative short list of 22 was suggested to the staffs of the two WALMI's as a challenge for them to complete the list up to a total of 99 items. These are matters for achieving quality in the training program. They are only likely to be fully developed over a number of years.

IV. INTEGRATION OF MANAGEMENT AND PARTICIPATORY PRINCIPLES IN TRAINING

A. Management Principles

Management principles are woven into the training through the introduction of the training-development cycle and the annual planning and review cycle. The training-development cycle emphasizes the development of job descriptions, performance evaluation standards, evaluation procedures and frequencies, and reward and sanction structure that are all widely known and commonly understood by the employee as well as the supervisor who is to do the evaluation. This careful definition and open evaluation procedure are part of modern systems of personnel management. They have been proven effective for efficient employee performance as well as satisfaction on the part of the employee in knowing where he stands and how he will be evaluated. Movement toward implementation of such a technique would take considerable effort and time in the Indian Civil Service.

Assembling an interdisciplinary team to tackle the problems surrounding the development of the training framework, syllabus, lesson plans, materials and visual aids with clearly defined leadership are important management concepts of team building role definition, and delegating responsibility. The rotation of the responsibility from year to year among staff will tend to build an esprit de corps. As well, it is a means of identifying those individuals with natural leadership capabilities as they go through the leadership training role of course leader of the training team.

Evaluation is an important management principle. This is because feedback is needed in the operation of any system for updated information to be used for improving the performance of the system over time. The extension of the evaluation to the actual field situation for the alumni tends also to let the field people know in general that their performance in the organization is important and that their views will make a difference.

The concept of an annual review is an important management tool for reflecting on the past accomplishments as a basis for planning future activities. The concept of iteration which takes place in the training development cycle and the annual review and planning cycle are manifestations of the management concepts of evaluation, feedback and improvement. There will be important opportunities for the IM&T Project to support management improvement in the WALMI's over the duration of the project. This can be accomplished through the use of structured, comparative international irrigation courses and the use of consultants to assist the WALMI's through the annual review and planning process. A special directors training course might ultimately be appropriately established at one of the Indian Institute of Management campuses.

B. Participation Principles

Participation principles are present in the process for the development of appropriate job descriptions, evaluation standards, assessment tools, and reward and sanction structure discussed earlier. This involves the utilization of course alumni as well as other individuals from the field as key informants in the process of defining jobs, assessing the courses needs for the future as well as evaluating the courses experienced in the past. Important participation principles are involved in the team building exercises which are used in the training development process as well as in the

delegation of leadership and responsibility with individuals when they are ready to assume these jobs. Another important participation principle which has not been discussed is the attitude that field officers have toward farmers. This requires an important attitude change. We must move from treating the farmer as inferior, to treating him as a client whose ideas, wishes and experience are to be listened to and taken into consideration. This does not mean giving the farmer everything he wants, but listening to his concerns and taking his ideas into advisement, no matter what his station in life. Irrigation systems would generally perform far better throughout the world if farmers were listened to and more use were made of their knowledge of the local situation.

Participation has a particularly important role in the action research which is done to support and complement experiential training. With ongoing action research there is a need to begin to bring farmers into the management interface with irrigation management agencies. Engineers must understand the role that they can play and the potential improvements which can be achieved with their participation. In general, irrigation agencies try to do too much for the farmers. Engineers extend their authority too far down into the system, thereby ruling out the positive and beneficial effects of organized farmers acting in the interest of their system. There are many lessons to be learned in the area of farmer participation particularly as they relate to management.

V. REVIEW OF AVAILABLE TRAINING MATERIALS AND TECHNICAL MANUALS

The following four sections include conclusions from a review of materials, examples of training materials to emulate, and examples to duplicate. Also general conclusions about the process of training material development and the role of IRMIC are provided.

A review of the available training materials and technical manuals from other programs around the world lead to the following five conclusions:

1. There are some very good materials available from a limited number of programs. The IRMIC should establish a collection of as many of these as possible, just as a library would collect relevant reference volumes. These materials can spark the imagination of the developers of training material appropriate for India. (These materials include those with the project officer, collected from India, Pakistan, the Philippines, the Water Management Synthesis Project and from Egypt.)
2. The IM&T Project needs to develop its own specific training materials needed for the program. There are no shortcuts to training material development. Collected materials from other programs should be identified as good examples of design and development, but they should be limited to that role alone.
3. Some materials will have general application across most states. The widely usable materials are best identified and developed by IRMIC. IRMIC's mandate will include the development of video lessons as well as printed materials. Video technology is sufficiently costly that a large number of copies of cassettes need to be made in order to spread the cost. IRMIC will have to decide on these topics of general applicability and separate these from those which are state specific. This needs to be done at a very early stage of IRMIC's work to support training and action research.
4. IRMIC will need to employ a multidisciplinary staff as the central training development team, including engineers, sociologists, communication specialists, extension educators, agronomists and economists if they are to develop the general materials for application across all of India. A careful selection based on both technical background and writing skills will need to be made. Training material development is a highly developed art. Such talent is possessed by only a few professionals.
5. Each STI will need to identify the persons who have the appropriate writing skills to develop the state training materials. An interdisciplinary effort of the core disciplines mentioned under 4 above will be required. Much effort will be required from the director at each STI to assemble an interdisciplinary team and to get interdisciplinary performance from that assembled group.

Example of carefully designed training manual:

A good example in this category is the training manual for water management specialists developed in Pakistan. The design of the lessons follow the format discussed earlier.

- 1 - Title
- 2 - Behavioral objectives
- 3 - Materials needed
- 4 - Site conditions required
- 5 - Duration of session
- 6 - Expected output
- 7 - Introduction
- 8 - Discussion
- 9 - Guide questions
- 10 - References

This format is suggested for adoption by the STI's. The materials viewed in the two states need more organization. Materials simply lifted from some professional paper or university lecture were loaded with academic content. Such material is irrelevant to the practical problem solving skills needed by trainers. It is suggested that this manual be duplicated and distributed to each STI for emulation in their training material design and development.

Example of general training materials adoptable for the interim period:

An example of a generalized methodology manual that has application with only slight modification all over India is the two-volume Diagnostic Analysis of Irrigation Systems from the Water Management Synthesis Project. This basic material which was first developed and used in the watercourse survey of Pakistan, has been found to be useful in Egypt, Sri Lanka, Bangladesh, Colorado, Gujarat, Rajasthan and Madhya Pradesh. This is only one example of the general type of training material which can initially be borrowed and used in a wholesale manner with modification. With further experience in India, however, the methods applicable to India will need refinement. Some methods will need to be deleted and some new ones added on a state-by-state basis.

D. Conclusions: No Shortcuts

In conclusion, training materials and technical manuals from other programs and other countries can only provide ideas to stimulate those charged with this responsibility in India. There are no easy solutions in this matter. The materials needed by the STI's in India will have to be developed in India. At the Central Water Commission, the Irrigation Research and Management Improvement Cell (IRMIC) will have the dual function of producing those materials that are generally applicable throughout the program across India and at the same time providing a uniformity and information exchange center for the materials that are developed in the states. IRMIC'S role in relation to the states needs to be interactive, iterative and supportive to every extent possible.

VI. ACTIVITIES IN SUPPORT OF EXPERIENTIAL TRAINING

A number of activities initiated under the umbrella of the IM&T Project will plan important supporting roles toward the achievement of the project objectives. These activities will largely focus on the support for and enhancement of the human skills required for the project to reach full implementation and effectiveness at an early stage. These supporting activities are initially seven in number, including (a) training trainers, (b) the world-wide course on comparative irrigation experiences for senior government officials, (c) the work of the U.S. contractor in support of the project, (d) the use of short-term consulting services on training and action research, (e) the action research conducted to complement the training effort, (f) the use of annual reviews and planning workshops, and (g) using recognition and awards. The following sections detail these activities and how they can be made more supportive of the IM&T Project.

A suggested timetable for these supporting activities is shown in Figure 8. Some of the activities suggested occur annually, such as the comparative irrigation experiences course, the annual workshops for review and planning and the the annual training of trainers. The timetable for training action researchers is more flexible as are the specialized consulting services used in support of the project. The work of the U.S. contractor would be continuous once that organization is engaged and in country.

A. Training Trainers

Training trainers is an essential activity at the beginning of the project. It is essential that this training be of high quality. Why? Because only through the definition, development and polishing of quality trainers and training skills, can the project hope to achieve its optimistic objectives. This is a quality decision for which the extra time and cost of sending the key trainers to an overseas center of training excellence is time and money well spent.

The trainers' training would attempt to alter the perception and skills of the trainers away from the traditional pedagogic lecture methods used in most academic situations to more appropriate methods for the materials, topics and trainees who are clients of the WALMI's. Part of this is an attitude change with the realization that the trainees have skills and background from their field experiences over the years that can be applied to the topic at hand. This recognition requires special skills for the trainers to ask the pertinent questions at the proper time, to draw out the answers from the client trainees, using the Socratic method.

The course that the trainers require should include four important parts. First should be an introduction to the general topic of irrigation management, experiential training, or training by doing and practicing the skills. Second should be a detailed interdisciplinary diagnostic analysis workshop activity. This would be essentially a combination of introduction to and practice of skills of each training group representing the disciplines of engineering, soils-agronomy, sociology, economics and extension/communications as a team building activity. Each STI core group should produce a diagnostic analysis report from the field work of four to five weeks. Third should be the training on communication skills, development

CHRONOLOGY OF ACTIVITIES IN SUPPORT OF EXPERIENTIAL TRAINING AND ACTION RESEARCH OF THE IRRIGATION MANAGEMENT AND TRAINING PROJECT (IMTP).

	1984	1985	1986	1987	1988	1989	1990
SENIOR OFFICIALS STUDY TOUR OF IRRIGATION FACILITIES & AGENCIES	X		X		X		
STATE TRAINING INSTITUTE ANNUAL WORKSHOP FOR REVIEW & PLANNING	X	X	X	X	X	X	X
SPECIALIZED COURSE FOR THE TRAINING OF STI TRAINERS	XXX	XXX	XXX				
ACTION RESEARCH GROUP ANNUAL WORKSHOP FOR REVIEW & PLANNING	X	X	X	X	X	X	X
SPECIALIZED COURSE FOR THE TRAINING OF ARC RESEARCHERS	XXX	XXX	XXX				
WORK OF USA CONTRACTOR'S RESIDENT TEAM OF SPECIALISTS	XX						
SHORT TERM SPECIALIZED CONSULTING SERVICES	XX	X	X	X	X	X	X

Figure 8.

of lesson plans, training aids and concise training materials, and the practice of new training skills on the peer group in front of television cameras. The production of a video record of the training attempt would allow the trainee to review with the course communication specialists the strong points and weaknesses of the trainer-trainee in the performance of his training assignment. Repeated performance of the different training skills would provide over six weeks improved skills and added confidence in performance with the video record as proof of the improvement over time. The fourth component would include one semester of formal course work in the trainers specialty to further upgrade his disciplinary skills. This semester would be accompanied by weekly meetings and seminars for the STI core groups to begin to define or redefine their curriculum to meet the needs of the program and with respect to their newly acquired knowledge in training methods and subject matter specialization. The end of this seven month period covering the four important parts could be capped by individual narrative reports of accomplishments by each of the trainers as a requirement for graduation.

Training trainers for the first three years should be done at a center of expertise overseas. After the first several years, an evaluation of the trainers performance in each of their respective STI's should be conducted to select the best training skills in each of the STI's nationwide for the composition of an ad hoc national training core group. From that point onward, the training of trainers should be done in India, perhaps with the assistance of the Institute of Secretariat Training and Management at Delhi. This would provide the central body of disciplinary expertise of excellent trainers to train other trainers, newly joining the WALMI service in conjunction with the training skills and communication skills of the all India Training Institute. The development of a capability in India is an important institutionalization of the IM&T Project concept of making India self-reliant in its training capability.

B. World Irrigation Course for Senior Officials

A wide range of agroclimatic conditions, physical environments, governmental and institutional formats and levels and intensities of farmer-irrigator participation occur in irrigation projects around the world. While the farmer and government responses in each situation are site and culturally specific, there are many observations that can spark further inquiry about modifications or applications to the Indian context. The on-farm water management experiences of Pakistan and Egypt, the irrigation districts and private irrigation companies of Colorado, the large scale reclamation effort of the Salt River Project and the Welton Mohawk Project of the U.S. Government in Arizona, the private irrigation of the Imperial Valley of California and the farmer participation efforts made in the Philippines are all projects that are worth seeing and comparing for lessons. It is proposed that a specially guided irrigation course be established for twelve Government of India irrigation officials to visit these above mentioned systems and projects to conduct a comparative analysis and determine innovations that are applicable to Indian conditions.

It is proposed that this one month course be documented for future use in the training programs of IRMIC through the use of video, slides and prints.

Through the world irrigation course the participants would be able to:

- compare irrigation experiences and witness the results of a range of government programs involving management, training and action research;
- analyze the observations systematically to compare the projects and government agencies visited; and
- write a detailed report on the comparisons, analyses and applicability of observations to specific WALMI training and action research activities within the respective states of India.

The philosophy of this type of irrigation course is that the leadership of innovative irrigation research and training programs must have a wide range of experience to effectively manage such programs. Increasing the range of experience of these key officials is the intent of this world irrigation course.

C. Work of the U.S. Contractor

The contractor that is chosen to support the IM&T Project represents a key link in making possible the achievement of project goals and fulfillment of project objectives. Support of the STI's and the ARC's and IRMIC will require special attributes of the contracting organization due to the human development focus and the process orientation of the project structure. The leadership of the field team and the personnel fielded as specialists will be important attributes on which the contracting organization will be chosen. The contracting organization must have had extensive prior experience in the special type of experiential training and action research in South Asia as well as the combination of training and research into a program to achieve the desired outcome. A set of quality criteria are suggested for the selection of the contractor.

The IM&T Project contractor shall have:

- at least 5 years experience in experiential training design, development and implementation in South Asia since 1970;
- at least 5 years of experience in action research design, implementation and evaluation with irrigation agencies in South Asian since 1970;
- a demonstrated ability to bring action research and training into a unified, mutually supportive program in the South Asian region;
- an ability to nominate and place a field party chief with at least five years of relevant experience in South Asia, extraordinary leadership, communication and management skills and with at least a State Department Level 2 of spoken appropriate Indian language skill, upgradable to level 3 within one year of the start of the project;
- an ability to nominate and field specialized training and research personnel who have at least three years of relevant South Asian experience and at least a State Department Level 2 of spoken appropriate Indian language skill, upgradable to level 3 within one year of the start of the project; and

- make a commitment of its personnel for the duration of the project, subject to annual evaluation of the Central Water Commission and the USAID Mission in New Delhi.

As can be seen from this above description, this project requires an extraordinary U.S. contractor, not the usual warm-bodied recruiter of unemployed castoffs from the streets. A serious firm with proven experience in South Asia, in experiential training, and with action research, and with an ability to field experienced personnel who have proven experience and language skills is needed.

Without extreme care about choosing an experienced, and serious contractor, the Irrigation Management and Training Project will likely not come close to achieving the potential that it holds for impact on irrigation management in India.

D. Specialized Consulting Services

The IM&T Project will need specialized consulting services case by case. In the support of the training these will include:

First priority: Assistance for the annual workshops for planning and review of the training program and action research. This would be a specialist in training and research to assist the WALMI's through self-evaluation and planning.

Second priority: Assistance for the conceptualization, planning design, and training of the personnel to conduct the action research program. This would perhaps be in the form of a team of specialists for a two-month TDY for two week reviews in each state of ongoing action research irrigation precedents and subsequent conduct of a six-week workshop on an actual case of the action research process and methodology.

Third priority: Specific assistance for the establishment of IRMIC. This should be a development communicator with specific skills in the establishment of a unit to develop training materials, including providing training to the core training material specialists.

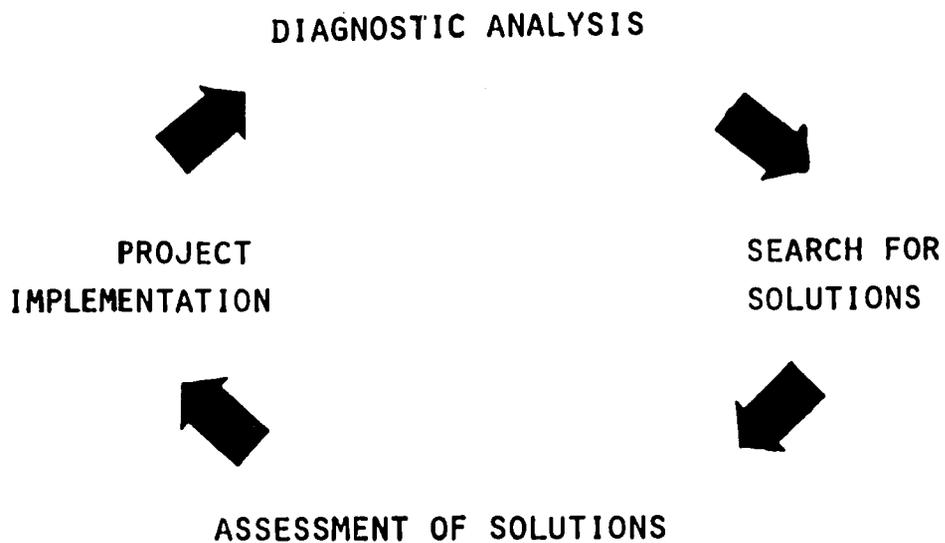
Fourth priority: Specific assistance to develop methodological handbooks for the conduct of the action research program. This would likely require one to two month TDY's for two to three times in the first year of the project.

As can be seen, these are mostly start-up activities for the assistance of the STI's, ARC's and IRMIC to reach productivity at an early date.

E. Action Research in Support of Experiential Training

As discussed earlier, the action research activities and the experiential training activities are highly complementary in their actual implementation. Both of these activities are part of the framework established in the research and development process shown in Figure 9. The four steps of the research development process are diagnostic analysis or the identification of problems, the search for solutions, the assessment of solutions and the pilot project implementation of the tested solutions. This

THE RESEARCH DEVELOPMENT PROCESS



ASSUMES: SYSTEMS APPROACH
INTERDISCIPLINARY METHODOLOGY
PARTICIPATION OF THE CLIENTS OF IRRIGATION
INSTITUTIONAL CAPABILITY BUILDING
MANAGEMENT ORIENTATION TOWARD POLICY DECISIONS
INTERNAL MONITORING AND EVALUATION

Figure 9.

cycle corresponds to the project cycle with heavy emphasis on evaluation at each step and feedback loops and iterative steps within steps. The process becomes an "action research and development process" with the introduction of the operating agency or farmers group as partners in the research process. A particular emphasis is made on practical problems and the answering of questions about operations which are important to the operating agency or the farmers' group. The benefits of action research are listed in Figure 10. These emphasize the role and benefits of the research. A stage is reached over time when a learning process is internalized in the agency which provides the momentum to keep the research and development process moving cyclically.

Experiential training supports all four stages of this action research development process. In this way action research and experiential training are mutually supporting. An added advantage is the fact that the trainers benefit from an exposure to and active participation with the action research process and the action research. Trainers become better researchers after having designed, developed and implemented project activities. The action research site often is a good location for the practical training. This can be the place for the practicum for the trainees to earn their credentials before returning to their jobs.

It is important for the WALMI's to integrate the action research function with the experiential training at an early date and to begin training on action research methods early. The program must be carefully thought through and the staff carefully chosen. Action research expertise and experience needs to be developed early so that a critical mass can be achieved in a timely manner, for full IM&T Project implementation.

F. Annual Review and Planning Cycle

It is suggested that the WALMI's be encouraged to establish a regular procedure for the review of the past year and to look forward and plan for the coming year. This is much like the approach the WALMI of Maharashtra is currently using. Such a procedure is suggested in Figure 11. Note it has six steps for an annual cycle.

First is the review of the past year. This includes the courses, the evaluations of the trainers, the trainee evaluations and other pertinent information. This is done with emphasis on improvement and focus on correcting deficiencies immediately. Second is the projection of the courses for the coming year according to the demands placed on the WALMI by the irrigation agency, CADA and the agriculture agency. Matching the demands with the available space, trainers, and money must be done at this time. Third is the adoption of an annual training calendar and the assignment of leadership roles for the courses. Emphasis in the calendar adoption must be given to quality of training rather than attempting to do too much, such that quantity is given preference to quality of training. Fourth is the annual conduct of training as it appears in the training development cycle presented earlier. The important part of the annual training cycle for the review process to be successful is the establishment of and implementation of objective evaluation of the trainees, trainers and the course content. Fifth is the follow-up of the alumni on the job. This would also include bringing in key supervisors and professionals to be trained for the careful establishment of job description, performance standards, tools for evaluation and a system of rewards and sanctions for specified types of behavior on the job. Sixth is to use the information previously collected to adjust the matrices of what the clients need to

ACTION RESEARCH: PRACTICAL RESEARCH THAT IS CONDUCTED WITH OR WITHIN AN IMPLEMENTING AGENCY THAT IS ORIENTED TOWARD ANSWERING QUESTIONS ABOUT OPERATIONS WITH IMPORTANT POLICY IMPLICATIONS.....

BENEFITS OF ACTION RESEARCH:

- 1) RESEARCH IS CONDUCTED IN PRACTICAL MANNER AS A MEANS TO ACCOMPLISHING AN OBJECTIVE.....
- 2) THE AGENCY HAS AN INCREASED ACCEPTANCE OF RESEARCH AS A VALID IMPROVEMENT STRATEGY BECAUSE OF ITS INVESTMENT IN MATERIAL AND PERSONNEL TO THE PROCESS.....
- 3) THE ORGANIZATION FINDS THE RESULTS CREDIBLE BECAUSE ITS OWN PEOPLE WERE INVOLVED IN COLLECTING DATA, ANALYZING AND WRITING THE REPORTS RESULTING FROM THE RESEARCH, AND ..
- 4) THE AGENCY LEARNS FROM THE EXPERIENCE AND THE LEARNING PROCESS FEEDS THE DECISION MAKING PROCESS TO MAKE THE ORGANIZATION MORE EFFICIENT AND EFFECTIVE SUCH THAT A CAPABILITY IS INTERNALIZED TO SOLVE FUTURE PROBLEMS.....

Figure 10.

STI-ANNUAL REVIEW-PLANNING CYCLE

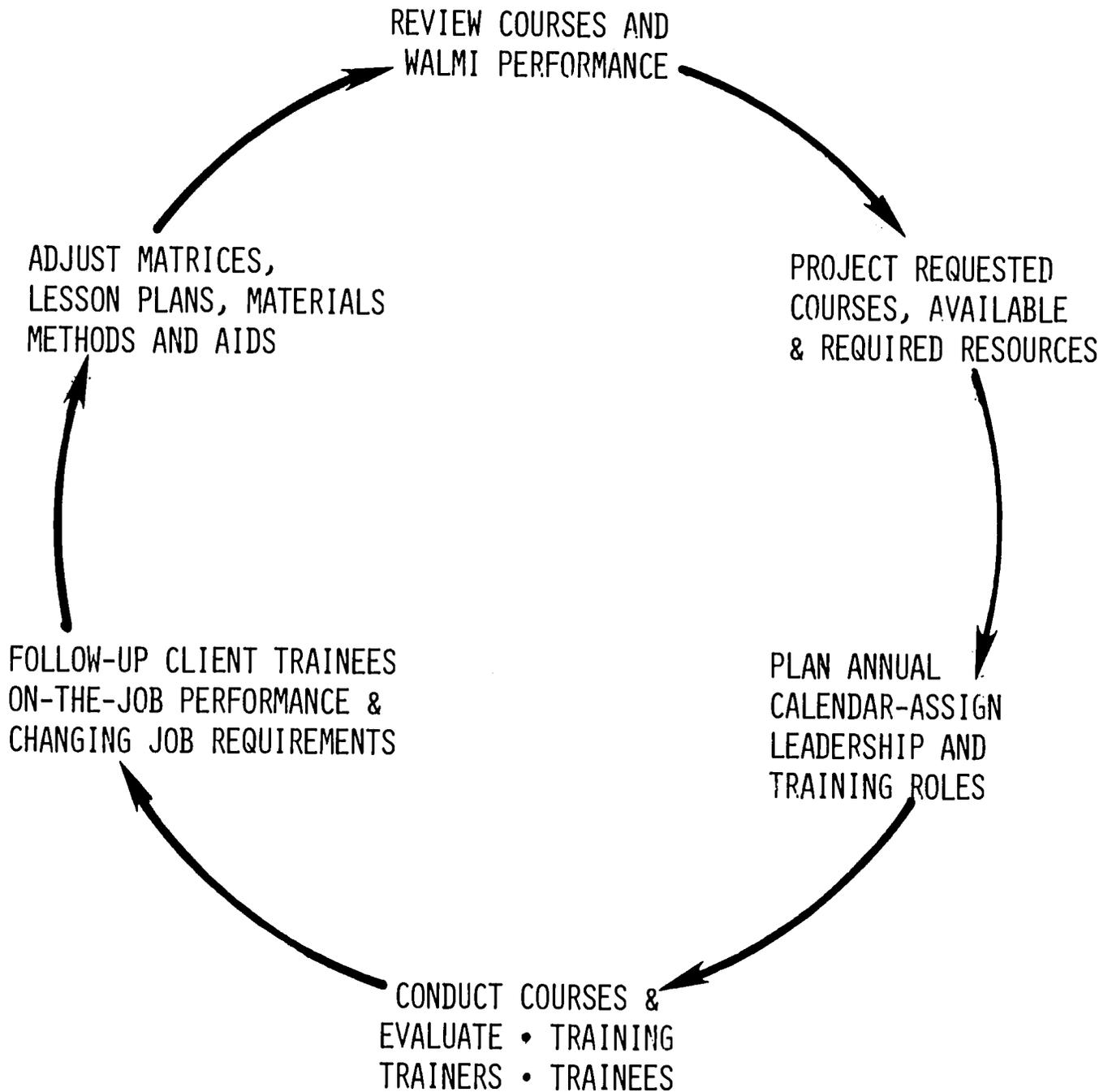


Figure 11.

know and to improve the behavioral objectives for the course, as well as the lesson plans, materials and the training aids. This step, then, is preparation for the annual review and planning session which continues the cycle.

As can be well appreciated, the early establishment of this type of self-correcting device can be valuable to the WALMI's and will require special consulting services for implementation in the beginning phases.

G. Recognition and Awards

Often the financial remuneration that is provided to workers in state agencies are insufficient incentive for the extraordinary efforts required by the program. In many cases when cash bonuses are not possible, it becomes useful and supportive for the program to establish annual awards in certain categories where excellence in training or excellence in action research merit recognition. The annual award does not have to cost much, can take the form of a trophy or certificate and can be paid for from private donations if funding limitations exist.

Carefully thought through criteria should be established well in advance so that the work of an impartial board of judges becomes straightforward. A minimum standard should be established and the award should be left vacant in any year that the standard is not met.

Perhaps the CWC is the level from which the awards are best judged and presented. Each state training institute and action research center should have award possibilities in relative equality so that individuals have opportunities in either activity. An annual awards ceremony can be sandwiched into another central level function, again to avoid extraordinary costs that a separate occasion would require.

VII. APPENDICES

A. Scope of Work for Training Expert - Dr. Alan C. Early*

The purpose of Dr. Early's TA for the Irrigation Management and Training Project is to conduct a review of State Training Institute's curricula, materials, and aids, and to evolve with selected Indian STI professionals an action plan for long term development of improved curricula, training materials, and training aids for State Training Institutes.

Work Activities

1. Consult with the Water Resource Member of CWC, the USAID Project Officer, and a World Bank official as to the importance of uniform curricula and training materials development for State Training Institutes (STI) with adequate flexibility to meet specific state needs. (Meet with Dr. C. Perry and G. Corey of World Bank about training, February 8, 1984.)
2. Review curricula, training materials, training methods and training aids at WALMI Maharashtra State with selected WALMI professionals to identify gaps and areas of improvement. Consult with WALMI Director and staff as to an effective process for long-term curricula and training material improvement. Identify places and resources (human) which can help facilitate the process. Determine which WALMI curricula can be adapted for use in other states of India. (Tentative dates: February 13-16, 1984)
3. Review existing curricula outlines and training materials at WALMI Gujarat State with WALMI Director and staff and suggest a plan of action for developing curricula over time. (Tentative dates: February 20-22, 1984)
4. Review with members of State Technical Council, Technical Working Group and participating organizations in Tamil Nadu State training plans and evolve a plan for curricula training materials, and training aid development (February 26-28, 1984).
5. Review the training materials and curricula developed in the Philippines, Pakistan, Egypt, and other countries available with the consultant and USAID Project Officer; and identify with selected Indian colleagues from Maharashtra, Tamil Nadu, and Gujarat what might be adapted for use in India. (Tentative dates: February 9-11, 1984)
6. Review available technical manuals and materials on irrigation water management with the USAID Project Officer (materials from several countries) and ascertain what materials can be used for developing useful training materials. (Tentative dates: February 9-11, 1984)

* Dr. Max K. Lowdermilk, USAID Project Officer has stated that the original scope of work required more than was humanly possible. The original scope initially designed for a six-weeks' TDY due to circumstances beyond the control of USAID and of the consultant was finally reduced to only three weeks.

7. Suggest a process by which management and farmer involvement concepts and principles can be integrated into the training in each subject area and at each stage and level of training.

8. Evolving a process and developing a plan of action for future work on curricula, training materials and aids for State Training Institutes. This plan should identify the subject areas, the types of materials, and the resources needed, showing a sequence of activities over time. (Tentative dates: February 17-18, 23-25, 1984)

9. Present the findings of the consultancy in a special seminar at the CWC to be arranged by the CWC-WR Member. This seminar could highlight training experiences in countries where the consultant has worked. Also, various training aids developed elsewhere that may be relevant to India could be demonstrated or exhibited. (Tentative dates: February 29, 1984)

NOTE:

If possible, a Member of CWC will accompany the consultant on field visits. The USAID Project Officer will be available to work with the consultant on weekends and the period of February 26-29, 1984. (It was not possible at the time for a member of CWC to accompany the consultant. For part of the time Mr. M.N. Venkatesan of USAID was with the consultant in Tamil Nadu and Maharastra states.)

B. Key Individuals Contacted During Consultancy

MADRAS:

Public Works Department

Secretary of Irrigation, Mr. M. Sarma

Anna University

Chancellor, Dr. V. C. Kulandaishwamy

Center for Water Resources (CWR)

Director, Dr. R. Sakthivadivel
Project Engineer
Selected staff of CWR

Institute of Management: Bangalore

Director, Mr. N. Krishnaswamy

Center for Agriculture and Rural Development

Professor, Dr. Shyama Roy

BOMBAY:

Irrigation Department

Secretary, Mr. P.R. Gandhi
Chief Engineer (Project), Mr. A.K. Shenolikar
Chief Engineer, Mr. D.N. Kulkarni

Command Area Development

Commissioner, Mr. M.D. Deshmukh

AURANGABAD:

WALMI

Director, Mr. H.V. Dhamdhare
Selected staff of WALMI

GUJARAT:

WALMI

Director, Mr. Panchighar
Selected staff of WALMI

Instituto of Management: Ahmedabad

Center for Management in Agriculture, Dr. Gopinath

Department of Irrigation

Superintending Engineer, Mr. K.B. Shah
Superintending Engineer, Mr. Murthy

University of Agriculture - Anand

Director of Research, Dean, Dr. C.B. Shah

Agriculture Department

Director, Agriculture, Mr. H.J. Patel
Director, Narmada Project, Mr. S.N. Joshi

NEW DELHI:

Central Water Commission

Chairman, Mr. Pritam Singh
Member, Mr. Sarma

Member, Mr. Srinivasan

World Bank

Dr. Chris Perry
Dr. Gilbert Corey

Ford Foundation

Dr. Gilbert Levine
Dr. Robert Chambers

USAID

Mr. William Janssen
Dr. Edwin D. Stains
Dr. Max Lowdermilk
Mr. M.N. Venkatesan
Mr. G.N. Kathpalia
Mr. D.R. Arora

C. Itinerary

Arrival February 18, 1984 (01:45)

- 02/18/84 AM Briefing on Irrigation Management and Training Project by Max K. Lowdermilk
- PM Study Documents on IM&T Project
- 02/19/84 AM Study IM&T Project Paper and other documents
- 18:35-21:10 air travel from Delhi to Madras
- 02/20/84 AM Meeting with Anna University and Indian Institute of Management about STI plans
- PM Courtesy call to Secretary of Irrigation, Tamil Nadu, Mr. M. Sharma
- Meeting with Indian Institute of Management, Bangalore on "Capabilities and Potentials" for STI participation
- 02/21/84 AM Meeting with Faculty of Water Resources Center on undergraduate and post graduate degree curricula
- PM Study Anna University program and documents
- 02/22/84 AM Meeting with Anna University faculties of Civil Engineering & Management
- Courtesy call to Vice Chancellor of Anna University, Dr. Kulandaswamy
- PM Field trip to Tank Project site of Action Research as potential training site and facility for experimental training
- 02/23/84 AM Briefing on key concepts and demonstration of training materials with Anna University Faculty Members
- Visit to training - demonstration farm being established on campus - Anna University
- 16:50-19:10 air travel from Madras to Bombay
- 02/24/84 AM Courtesy call Secretary of Irrigation, Mr. P.R. Gandhi
- PM Discussions with Mr. H.V. Dhamdhare, Director of WALMI
- 02/25/84 AM Attended project orientation

PM Workshop for Maharashtra state

02/26/84 AM Attended project orientation

PM Workshop for Maharashtra state

02/27/84 AM Study documentation on WALMI, Aurangabad
11:30-13:55 air travel from Bombay to Aurangabad

PM Tour of physical training facilities by Dr. Varade

02/28/84 AM Tour of field training facilities of WALMI by Dr. B.M. Sahni

PM Discussions of WALMI experience with Director H.V. Dhamdhare

02/29/84 AM Seminar with WALMI staff on key training concepts
demonstration of training manual
15:45-16:25 air travel from Aurangabad to Bombay
18:00-18:55 air travel from Bombay to Ahmedabad
19:30-20:00 overland from Ahmedabad to Gandhinagar

03/1/84 AM Visit of present WALMI campus and discussion with WALMI
Director, Mr. G.T. Panchigar and faculty members

PM Inaugurate course and introduction to and discussion with
trainee officers of 3-week course on "Land Development &
Water Management"
Courtesy call on Secretary Patel: discussion with faculty
members
Discussions with Indian Institute of Management Dr. C.
Gopinath, Dr. G. Sharan, halt at Gandhinagar, Circuit House

03/2/84 AM Seminar with director & faculty members of WALMI, Gujarat to
discuss key training concepts and training material
development
Meeting with Dr. M. Modi of Baroda University and Dr. C.B.
Shah of Anand University. Discussion with invited field
officers along with faculty members.

PM Discussion with invited field officers and faculty members -
Mr. K.B. Shah, Mr. S.N. Joshi
Visit to Indian Institute of Management, Ahmedabad

03/3/84 AM Visit to nearby irrigation sites at Hathmati and Watrak systems, accompanied by WALMI Director and officers

PM 18:00 leave Gandhinagar for Ahmedabad

19:25-21:45 air travel from Ahmedabad to Delhi

03/4/84 AM Develop detailed report outline

PM Write report

03/5/84 AM Write report

PM Study technical manuals and training materials from other countries - discussion with Dr. M.K. Lowdermilk

03/6/84 AM Write report

PM Write report

03/7/84 PM 15:00-17:00 Seminar - Central Water Mission, New Delhi

03/8/84 AM 04:15-09:30 Delhi - Bangkok

12:40-16:40 Bangkok - Manila

D. News Report on Project Orientation Workshop

Indian Express: February 27, 1984

"STRESS ON FOREIGN AID FOR IRRIGATION"

"BOMBAY, Feb. 26.

Mr. P.R. Gandhi, Secretary to the Irrigation Department, underlined the importance of technical assistance being provided by foreign agencies for irrigation development in India. This technical know-how would be utilized keeping in mind the system and practices prevalent in Maharashtra, he added.

Mr. Gandhi was inaugurating the two-day Project Orientation Workshop of U.S. aid assisted, irrigation management and training at Mantralaya yesterday. This was stated in a press release.

Dr. Stains, Dr. Lowdermilk, Mr. Venkatesan of the U.S. Agency for International Development were also present at the workshop.

The secretary further said that in a democratic society a pattern would have to be evolved whereby we could gradually change from one system of irrigation to another. Farmers' participation was also a prerequisite for the success of irrigation system, he added.

The main objective of the workshop was to acquaint senior officers from the irrigation and other departments connected with irrigated agriculture with the framework and major components of the India Irrigation Management and Training Project.

The project will assist Government of India and state governments of Maharashtra, Gujarat, Madhya Pradesh, Rajasthan and Tamil Nadu for development of human and institutional resources in the irrigation sector. The total project cost is Rs. 792 million of which Maharashtra component would be Rs. 116 million and half the cost would be met by U.S. aid through loan and grant.

Participating in the Workshop, Dr. Max Lowdermilk of USAID Delhi Office emphasized the urgent need for investment in manpower development. The returns from such investment were tremendous as these would substantially increase the returns on investments already made on irrigation projects. He complimented the Government of Maharashtra for taking a lead in starting WALMI which was working as a model for other states. Maharashtra would continue to plan this leading role, he hoped.

Emphasizing the flexible nature of the project contents, Mr. Stains stated that actions under the project would be reviewed from time to time and reoriented as required.

Mr. H. V. Dhamdhare, chief engineer and director Water and Land Management Institute, Aurangabad, welcomed the delegates. In his welcome

speech he pointed out that over Rs. 1500 crores were spent on irrigation projects in Maharashtra since inception of the Five Year Plan and potential of 2.3 million hectares would be created by the end of the Sixth Plan. Revolutionary changes had been made in the system management in the last 15 years. The Government had established command area development authorities with multi-disciplinary teams for rapid utilization of irrigation facilities. A large number of persons trained in various disciplines of irrigated agriculture were required for proper management of irrigation systems, he added.

Mr. Sarma of Central Water Commission, Mr. Deshtraukh, commissioner, Command Area Development and officials of the Planning Finance, Agriculture and Irrigation".

E. List of Training Materials Shared at Anna University, Tamil Nadu:
Walmi, Maharashtra and Walmi, Gujarat.

Irrigation Personnel Manual

Handbook for Zonemen (in Thai)

Royal Irrigation Department, Thailand

Part 1. System Management

Part 2. Irrigated Crop Production

Farmer Irrigation Primers

Primer on Communal Irrigation Structures

National Irrigation Administration, Philippines

Primer on Communal Irrigation System Management

National Irrigation Administration, Philippines

Audio-Tutorial Guide Books, Slides and Cassettes

Financial Management System for Irrigators Association

National Irrigation Administration

Command Irrigation System Management

National Irrigation Administration

Irrigated Crop Production

Irrigation Administration

Methodology & Report of Diagnostic Analysis

Diagnostic Analysis of Irrigation Systems

Volume 2: Evaluation Techniques

Colorado State University - WMSP

Diagnostic Analysis of Farm Irrigation Systems on the Mahi-Kadana
Irrigation Project

Gujarat, India, Department of Irrigation

Water Management Synthesis Project - CSU

Extension Bulletins

The Philippines Recommends for Integrated Farming Systems, 1976

Philippine Council for Agriculture and

Resources Research and Development

Field Problems of Tropical Rice

The International Rice Research Institute

F. Key Questions in Training Development, Implementation and Evaluation

1. Who are the clients?
 - a. What is their relationship to the ultimate water users?
2. What are the job descriptions of the clients?
 - a. Do they know?
 - b. How informed?
3. Is the job description congruent with program objectives?
4. What do the clients need to know?
 - a. How much do they know now?
 - b. How determined?
5. What do the clients need to practice?
 - a. How much do they practice now?
6. What attitudinal and behavioral changes are required in clients?
 - a. Are they aware of needs?
7. How will clients be evaluated?
 - a. Do they know how they will be evaluated?
8. How will good performance be rewarded?
 - a. Poor performance sanctioned?
9. What guidelines have been provided for program development?
10. What constraints or limitations have been placed on program?
 - a. Extra advantages?
11. What other constraints have arisen during the course of the program?
 - a. Advantages?
 - b. What organizational changes are required for program implementation?
12. What is the organizational structure of the training staff and consultants?
13. Do training staff have specific job descriptions?
 - a. Do they know these descriptions?
14. How are the training staff evaluated?
 - a. How often?
 - b. By whom?
 - c. Do clients participate?
15. What is the ratio of classroom/field?
 - a. theory/practical?
 - b. new/repeat material?
16. What is the ratio of technical/organizational/communication/
/methodology material?
17. What changes are needed to meet the needs of the clients?
 - a. Ultimate water users?
18. Is feedback sought from ultimate users?
19. How will such changes be incorporated?
 - a. Who will have responsibility?
20. Is there a systematic review process in place?
 - a. Can one be implemented?
21. How is feedback obtained from the field? Past participants?
22. How are training plans made from year by year?
23. Do annual training plans change with feedback from the field?

24. Is there information and experience interchange between government departments and universities?
25. Is deputation practiced? How?
26. If not practiced now, can it be instituted?
27. How will impact of training program be ultimately measured?
28. How will training program impact be monitored?
29. What role will alumni have in training development cycle?

G. Key Concepts in Achieving Quality Training Programs

The following are some key concepts that are prerequisite to attaining quality training programs. This list is not exhaustive. The consultant challenged the faculties of WALMI, Maharashtra and WALMI, Gujarat to expand the list from their own experience.

1. Direct correspondence between job requirements and training objectives: This helps to focus the training on actual needs and provides the trainee with knowledge and skills that are of direct benefit to himself, to the end users of water and to the water and land management improvement program as a whole.

2. Use the behavioral objectives format: This format emphasizes what the client (trainee) will be able to do at the end of the lesson and stresses the experimental type of training that involves putting the skill into practice.

3. Develop lesson plans carefully: Use the simple format of title, objectives materials, training aids, site, duration, introduction, presentation, application and output (questions, etc.) to focus the lesson into a concise unit.

4. Use a participatory training approach: Emphasize the knowledge and skills that the client trainees bring to the training forum and utilize the Socratic method to bring out the answers through dialogue rather than lecture.

5. Seek a balance between theory and practical aspects: Theory should be minimized since this training is not for an academic degree but is done to support an action implementation program.

6. Seek a balance between classroom and field activities: Classroom activities should use methods beyond just lectures, like discussions, simulation games, drama, debates, and field exercises should be scheduled daily for the clients to practice what has been learned in the classroom.

7. Force new skills to be practiced: Practical experience with the new knowledge and skills will allow reduction of inhibitions to use them later on the job and forms the core philosophy of experienced training.

8. Avoid academic excess baggage: Each academician has been taught to know more and more about less and less, and each has pet topics into which they like to lecture in great detail. Such information is often too detailed and too technical to be of any use to an action program and must be discarded as superfluous to the implementation program at hand.

9. Include simulating mental exercises: The development of a problem solving attitude can be enhanced with carefully constructed games and mental exercises, as well as the development of riddles and use of proverbs to cause certain lessons to be internalized by the clients.

10. Design special purpose visual aids: Visuals especially designed and can provide great support toward achieving training goals.

11. Limit handouts to specific client trainee requirements: Handout lecture materials and background reading materials need to be focused on the client group category and job assignment and should be a concise summary for review and future reference purposes.

12. Evaluate training program, trainers and trainees: Programs are generally very good at evaluating trainees but for the program to improve with time and to meet the needs of the implementation programs of each state, both the trainers and content of the training require periodic review and revision.

13. Follow-up clients with on-the-job visits: A list of client assignments can be shared by faculty and efforts made to visit alumni at their job sites to gain further insight for training improvement for future courses.

14. Use a simple newsletter to keep client-alumni informed: A newsletter can share the results of state training institute efforts in training and action research and provide a forum for expansion of the water and land management coalition.

15. Define a role for the alumni: The alumni are a resource to be used in defining needs for training, changing conditions in the field and to assist in the expansion of the coalition on water and land management whose purpose is to improve effectiveness of irrigated agriculture.

16. Build a water and land management coalition: Encourage in numerous ways the informal establishment of a group of professions from many backgrounds and disciplines who are dedicated to the improvement of water and land management in India.

17. Allow time for recreation - intramurals: Provide time and encouragement for recreational activities from mental exercise (like chess) to physical exercise (like sports) to prevent the lethargy that often occurs in intensive training programs that overemphasize the mental process.

18. Emphasize the farmer as the end-user client: Focus such that the irrigation professionals can undergo an attitudinal change and treat the farmer as the client whose problems and interests are to be served by the Government servant.

19. Build good communication skills: Communication skills require great effort and much encouragement. Training and practice must occur before effective communication occurs.

20. Training should be an enjoyable experience: Too often training is tedious and difficult. Make it a pleasant experience and the acquisition of skills a fulfilling experience that results in rewarding career advancement through improved job performance.

21. Employ new training techniques: Innovation should be encouraged to bring new training techniques into the program both to challenge faculty for greater competence and trainees to greater efforts.

22. Employ new training technologies: With the revolution that is occurring in many fields of technology, opportunities arise for the use of video recording in training and computer-assisted simulation of systems or processes as means of making the training more relevant.