



## KNOWLEDGE MANAGEMENT IN PUBLIC WATER SUPPLY SYSTEM UNDERTAKINGS

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### INTRODUCTION

The prime task during the International Water Supply and Sanitation Decade is (a) to appraise as a matter of urgency the status of the community water supply, sanitation facilities and services and their control and (b) to formulate within the context of national development policies and plans, by 1980, to programmes with the objectives of improving and extending those facilities and service to all the people by 1990. Its successful accomplishment depends on the familiar three major inputs of finance, materials and men.

The financial adequacy is a question of budgetary priorities which can be reviewed and reworked at any time. Similarly, the material needs are area where reworking of manufacturing and production philosophies can help.

In the realm of manpower development, the problem sub-divides into one of optimising the existing manpower and producing additional future manpower. The production of additional future manpower is obviously a time related effort to be nurtured and developed through its entire time span of evolution. Distinctly different from this is the need for optimising the existing manpower. The concern in this sphere is both immediate and imperative. Its planning and implementation forms the primary objective of what can be more comprehensively termed as 'knowledge management'. Its pathways and development in the sphere of public water supply system management are analysed in this paper.

### THE MEANING OF KNOWLEDGE MANAGEMENT

The word 'KNOWLEDGE' in modern professionalization encompass such a wide spectrum of meaning that led the management author Kenneth Boulding to observe that for all its importance in the world system, knowledge is difficult to define and even more difficult to measure "(ref. 1)". True knowledge emanates from out of a validation of all available information. Its implementation and utilisation to beneficially control all subjective operative processes becomes knowledge management "(ref. 2,3)".

### THE PATHWAYS OF KNOWLEDGE MANAGEMENT

In simple terms, knowledgemanagement is a group exercise in first developing reliable knowledge bases by marshalling and validating

all available information and secondly the implementation and utilisation of such knowledge to control every professional's subjective operative processes. If we break this down to sequential tasks, these can be identified as communication, co-ordination, information dissemination, documentation and manpower training. These are amplified herein.

### COMMUNICATION

The fundamental conviction to allow one's dictums to be tempered in its different branches by associated personnel irrespective of stature is the basic approach of a meaningful communication activity.

An useful approach would be to organise in every water supply system undertaking a periodic round table of views from all concerned irrespective of hierarchy and following it up with a certain degree of experimentation before the succeeding meeting with a view to continue the efforts. These, for one thing, serve to enable the members to first of all become aware of where they stand. Such an awareness is the basic crystal over which the professional importance and conscience grows. Gradually, such home round-tables can be widened into objective type workshops in order to locate and identify areas of mutual help between different local water supply system undertakings, a form of effort, normally called as co-ordination.

### CO-ORDINATION

The logical extension of local communication consensus is always in the form of mutual co-ordinated efforts. Thus, for example, in the classical illustration of down the stream water utilities, the last in the line suffering the maximum onslaught of all the higher up utilities & pollutions, can be helped to a large extent if only the upstream personnel are made to understand the difficulties caused by their waste discharges. Such extensions on the water supply front is something, which, in its present state of total absence is causing undue hardships to many a local water supply systems undertaking. It is only these co-ordinated workshops which can generate and identify precise areas of immediate overlapping responsibilities of water supply system undertakings at sequential levels.

## INFORMATION DISSEMINATION

There are some limitations in the earlier ventured ideas of Communication & Co-ordination in their becoming the sole pathways of overall success. The main difficulty is the even theoretical, leave alone practical, impossibility of all related people from converging into a single spot at a given time of occurrence. This is all the more true of Co-operation based workshop type of ventures. It is in these situations, that information dissemination becomes one of paramount importance. By a simple comparison, if our daily news media can admirably bring international developments into the grasp of even the remote population, then, there must be an equally effective way of technical information dissemination also.

## DOCUMENTATION

The fact that knowledge as validated from the foregoing sequential efforts has to be documented for immediate and future needs is well recognised. The journals and newsletters as brought out have shown a significant growth in recent times and consequently documented information of progresses and events in far off locations become available for the Public Health Engineer more easily and more readily nowadays.

But, most of the journals originate and propagate from the developed countries. Among the developing countries also, such journals and newsletters have to now become more popular. The example of the Indian Water Works Association, The Institution of Engineers - India, The Institution of Public Health Engineers - India, The Indian Association for Water Pollution Control and the Indian Standards Institution which bring out a substantial amount of information in their journals needs to be followed by many of the developing countries.

## MANPOWER TRAINING

This task forms the logical culmination of the aforesaid sequential tasks and is the basis for any public organisation as summarised in Table 1 (ref. 4)

Generally, a majority of personnel dealing with water supply systems may be discharging their duties in more or less traditional and accustomed way. One reason for this absence of enterprise is the non-availability of spare time and private funds to go in for a voluntary technical advancement. It is precisely at this juncture that manpower training as imparted by the organisation comes in as an accentuated necessity.

The primary aim of such a training must be to expose both professionals and sub-professionals to selected and aptitude oriented course works. A possible training outline is illustrated in Table 2. Such courses are not tota-

lly devoid as of now. Some courses are organised at state levels. Some at country levels and some at inter country levels by universities, professional institutions and international agencies. But, mostly, these narrow down to the middle level management personnel and leave the sub-professionals and junior management personnel out from their coverage.

Hence, it becomes necessary for each water supply system undertaking to evolve and sustain an intra departmental training school of its own.

## THE METROWATER TRAINING SCHOOL AT MADRAS

Recognising the need for a training school as discussed in the foregoing section, the Madras Metropolitan Water Supply and Sewerage Board, (METROWATER) has embarked on a program of systematic training for its staff. The training programme has been evolved under the joint auspices of the State Government, the National Government and the Overseas Development Administration of the United Kingdom through the British Council under the Colombo Plan. The programme is a constituent of a UNDP aided project for the implementation of a Master Plan for improvements to Water and Sewerage services.

A full fledged training school building costing nearly Rs.2 million is nearing completion. Some of the notable components of this school would be facilities such as teaching rooms, workshop areas, projection room, closed circuit Television facility, film storage and retrieval facility etc. The Overseas Development Administration of the U.K. would gift essential training equipment to the value of nearly 47,000 British Pounds and finance the visits of Specialists from the National Water Council, U.K.

## TRAINING COURSES ALREADY CONDUCTED AND IN THE OFFING

Parallel to the construction of the training school building, the activity of developing the required course outlines and going through some of the courses with the guidance of a resident training manager from the U.K. has been in progress by utilising a spare building space in the Board's Kilpauk Water Works premises.

These courses have been evolved for certain levels of the staff like,

- (i) Craft Apprentices
- (ii) Engineering Diploma Holders
- (iii) Technical Supervisors
- (iv) Professional Engineers
- (v) Clerical Supervisors
- (vi) Professional Managers and
- (vi) Professional Accountants

The courses so far developed and imparted from 1979 are listed in Table. 3.

TABLE 1  
TRAINING FACETS CONSTITUTING EFFECTIVE PUBLIC ORGANISATION DEVELOPMENT

GENERATE EFFECTIVE MANAGEMENT SKILLS AS	DEVELOP A FRAMEWORK FOR ADEQUATE ACTION BY	INCREASE ORGANISED AND KNOWLEDGEABLE KNOWHOW IN	SOLVE PRESSING ORGANISATIONAL PROBLEMS AS
Holding productive staff meetings and encouraging free and frank transmittals.	Assisting in development of managers skilled in the use of training tools	Conducting training programme to improve the quality and quantity of work	Orienting the employee and teaching him (in so far as is necessary) his job
Improving and making more effective pre-existing organisation-employee relationships	Creating an organisational climate for the agency for its own improvement	Using on the job Training as a management tool for more productive efforts	Training ' supervisors in name' to become 'supervisors in fact' for realistic efforts
Permitting the involved administrator to freely improve administration	Developing & maintaining a management and employee communications net work.	Meeting management responsibilities in planning, control & decision making	Using the employees' brain power to solve pressing organisational problems
Giving the administration access to organisational problem solving techniques	Giving employees responsibility for making the organisation better.	Thinking about proper and efficient employee utilisation and his involvement	Increasing the ability to consider the trouble spots in the organisation.

TABLE 2  
SUGGESTED TRAINING OUTLINE FOR PUBLIC WATER SUPPLY SYSTEM PERSONNEL

CATEGORY I	CATEGORY II	CATEGORY III	CATEGORY IV
Administrative Head Engineering Head, Financial Head, Senior Engineers	Middle Level Engineers Junior Level Engineers Chemists	Operative Engineers Electrical Operators Site Operation Heads	Skilled Craftsmen, Plumbers, Mechanics Filter Operators
COURSES	COURSES	COURSES	COURSES
Management Practice Financial Analysis SWOT Analysis Problem Identification Programme Design Orientation Programme Evaluation Action Training Review & Feedback Transmittal Techniques Motivation & Awards Leadership & Rationale Humour & Tension Documentation Organisation development Consultancy Management Priorities Posteriorities Managing Transitions Quality Control Myths & Realities Work & Leisure Business Ethics	Basic management Engg. Standards Engg. Accounting Materials Management Computer Techniques System components Water Collection Water Treatment Water Distribution Billing Budgetting Codes of works Planning construction W.S. System O&M Sew. System O&M Water Supply laws Quality control Metering Health & Job safety Records & Upkeep Motivation Documentation Training	Basic supervision W.S. Fundamentals Sewerage Fundamentals Building Technology Ele. Water quality Water supply laws Ele. Hydraulics Flow & pressure Pumping Station O&M Treatment Plant O&M Valves and meters O&M Pipe laying chlorination sanitation Maintenance Fault location Fault corrections Concrete work Billing Accountancy Materials Accounting Safety techniques Road repair Road laying	System Appraisal Basic Job skills Pipe & Fittings Trench Excavation Backfill Techniques Leak Detection Pipe Location Valve location Pipe cutting Pipe jointing Pressure drilling Road cutting Road Repair Plumbing valve operation Masonry Carpentry Bar bending Meter installation Meter reading Meter repair Water quality Reading & Records Materials storage

TABLE 3

## COURSES DEVELOPED AND IMPARTED SO FAR

1. Induction Course to the new personnel
2. Water Treatment Plant Operation
3. Ground Water Technology
4. Water Supply Fittings Course
5. Attending to the Burst in water mains
6. Filter Operation
7. Water Meter Reading
8. Sluice Valve Maintenance
9. Fitter Water Supply
10. Principle & Operation of Treatment works
11. Sewer Maintenance
12. Principles of Supervision
13. Main Laying
14. O&M of Sewage Pumping stations
15. Analysis of sewage
16. Design of Sewage Pumping Station
17. Induction course to the new chemists
18. Laboratory Management
19. Principles & Operations of Maintenance
20. Fault finding of Mechanical Plant
21. Fault finding of Electrical plant
22. Maintenance of Registers and Records
23. Complaint Registration
24. O&M of Sewer Cleaning Machines.

## CONCLUSION

In modern contemporary management of public service systems and in Water Supply system undertakings in particular, knowledge management is the vital key. The magnitude of this task is quite huge in this International Water Supply and Sanitation Decade.

The pathways of a successful knowledge Management programme have been presented in this paper. Sequentially, these component activities are communication, co-ordination, information dissemination, documentation and manpower training. There is an urgent need for the initiating and sustaining of these activities in the water supply system undertakings in the developing countries.

Sometimes, such a programme could well meet some initial resistance. Because, knowledge management aims at shaping the individual to respond to certain stated situations in certain stated ways and hence implies a change in behavioural response from one of what he might be doing so far to one of a more scientific and positive response. After all, in many situations, we encounter individuals serving for many years. Seldom they relish a demand for a change. But, then, these are normal human attitudes and they have to be first convinced that the knowledge management programme would not embarrass them by exposing their inadequacies, but, on the contrary, would effectively enrich their skills, they would like the programme.

After all, history teaches us that such initial resistance and later willing embracing is but a normal occurrence whenever a change has been sought to be brought about. An apt example would be the case of the now famous Management By Objectives(MBO) programme when it was implemented initially as illustrated by the following American anecdote.

In one highly publicized incident the entire decentralization MBO process was nearly scuttled because a state truck ran over a cow. The Owner wrote an indignant letter to the legislature and the state office bureaucracy attempted to use the incident as proof that MBO produced reckless and irresponsible behaviour at lower levels, implying that every cow in the state was endangered by MBO. Fortunately, the direction of administration for the state was able to resolve the question quickly. One of the major influences was the fact that a speedy response was forthcoming. Within an hour of the report's reaching the state capital, a responsible official from the region was on the scene, viewing the bovine's remains and making specific arrangements with the farmer for fair reimbursement from local funds. Under a more centralized system, the payments would have been years in coming, for, the state capital was more than a hundred miles from the cow. (ref. 5)". It is the very same American Society, which has subsequently not only embraced MBO but has grown to be a trend setter ever since.

Similarly, an effective knowledge management programme is surely bound to be highly instrumental in helping us reach our committed goals in the International Water Supply and Sanitation Decade.

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