BACKGROUND AND OVERVIEW OF MANAGEMENT OF COMMUNITY WATER AND SANITATION TRAINING PROGRAMME FOR LOCAL GOVERNMENT TRAINING PROGRAMME

National Community Water and
Sanitation Training Institute

WRC Report No. 880/1/00

Water
Research
Commission

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BACKGROUND AND OVERVIEW

of

MANAGEMENT OF COMMUNITY WATER AND SANITATION TRAINING PROGRAMME FOR LOCAL GOVERNMENT TRAINING PROGRAMME

by

NATIONAL COMMUNITY WATER AND SANITATION TRAINING INSTITUTE

REPORT TO: WATER RESEARCH COMMISSION

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EXECUTIVE SUMMARY

"The development of our society, our growing population, and the legitimate demands of the disadvantaged majority for access to that most crucial natural resource - water - have placed new demands on what is, although renewable, a limited resource that can easily become polluted or over-used" (Prof. Kadar Asmal, 1997).

The provision and availability of clean water and sanitation to all South Africans is indispensable to the success of the government's Reconstruction and Development Programme (RDP). In line with this statement, the policy of the Department of Water Affairs and Forestry is to ensure safe, basic water supply and sanitation service to all South Africans. According to the Constitution the roles of Central Government in the water sector are "ensuring that services are provided while Local Government is tasked with the actual provision of services" (Guideline for Training and Capacity Building on Water Supply Projects, May 1997). Local Government should ensure that all communities have access to basic affordable services such as clean water, waste removal and sewage (White Paper on Local Government, March 1998).

The backlog on supply is most noticeable in the rural areas of the country but "... this backlog (also) extends to the capacity of people to control and manage the services they need on a sustainable basis. The gradual devolution of power from central government to local government is a (gradual) process and it will take a considerable time before local government departments are themselves fully empowered" (Guidelines for Training and Capacity Building in Sanitation Projects, December 1997).

For all services to be administratively, financially and technically viable, capacity building within Local Government is essential. Capacity building refers to both the content of the learning material and the processes for transferring the knowledge to the learner, in this case the adult learner. It was recognized that for any capacity building programme to be successful an integrated, holistic approach to training is essential. This training programme is therefore developed to ensure that water services in South Africa become administratively, financially and technically viable.

Relevant policy and statutory documents were used as guidelines for the training programme. The learning material for the programme can be used for the successful training of councillors and officials of Local Government. A learning requirements analysis indicated that the councillors and officials tasked with the delivery of water and sanitation services needed exposure to local governance issues; human and resource management; development and financial management; project planning, implementation and operation and maintenance; sustainability of projects; technical issues and environmental sanitation and solid waste management.

3 volumes of learning material, covering technical, non-technical and development and finance issues were developed, after the learning requirements analysis had been done. This learning material was offered as a pilot programme to councillors and officials from the Northern Province. Inputs from participants were taken into consideration, the learning material was revised and then offered to councillors and officials in the Free State (Qwa-Qwa region). Inputs were gathered from the participants and other roleplayers. The learning material was revised taking these inputs into consideration. This resulted in seven volumes

(34 modules) of learning material being developed that can be used for the training of councillors and officials of local government who are tasked with water and sanitation services delivery.

However for successful development of the 7 Volumes of learning material other issues needed to be researched. This research resulted in the Background and Overview Document being developed which addresses the process followed in the development of the learning material.

Background and Overview Document:

Chapter 1 deals with the background to the water supply and sanitation sector in South Africa. Capacity building and training needs within the sector were investigated. A thorough research of the current policies and legislation assisted in the verification of target groups and their levels of responsibility within the water and sanitation sector.

In Chapter 2 a matrix was developed, from the survey done on current policies and legislation. The matrix illustrates the target groups, the tasks they need to perform in the water supply and sanitation sector in South Africa and the identified outcomes, that is the level of responsibility carried by the various target groups translated into outcomes.

From the information gathered in Chapter 1 and 2 the Local Government's role with regards to the water supply and sanitation services was established. This resulted in a decision being taken to develop a learning programme for capacity building within Local Government structures for the successful planning, implementation and operation and maintenance of water supply and sanitation services.

Chapter 3 deals with the development of this learning programme for the management of community water and sanitation. A curriculum framework is developed which addresses the issues of education of adults, integrated and outcomes based approaches to education and training, modular structure of the learning material, participatory methods of training and assessment and evaluation. This chapter also includes the evaluation criteria applicable to courses offered by National Community Water and Sanitation Training Institute. Course accreditation and transportability of skills is also discussed.

Chapter 4 includes a detailed modular structure of the learning material. The management of the learning material is also discussed.

For successful learning-centred training to be achieved, guidelines for the facilitator have been included in Chapter 5. Included in these guidelines is how to be an effective facilitator, how to deal with learners and how to motivate learners to achieve the best results.

Chapter 6 includes an explication of relevant terms used in education and training. Chapter 7 advises on the way forward.

Learning material – Volume 1 – 7

The learning material is divided into 34 modules. These modules have been consolidated into 7 volumes.

Volume 1- Local Governance:

This volume deals with local governance issues namely status, focus and functioning of local government, principles of local government and all the legal aspects and policy documents relevant to local government.

Volume 2 – Project Planning

The project cycle, introduction to planning, community management, project appraisal, project planning and contractual procedures are included in this volume.

Volume 3 – Project Implementation

For a project to be implemented successfully the following topics are examined in this volume namely financial aspects to be considered in project implementation, project implementation by communities as well as contractors, project control and monitoring and evaluation of projects.

Volume 4 – Operation and Maintenance and Sustainability

For any water supply and sanitation scheme to be successful operation and maintenance is of significant importance. This volume investigates the roles and responsibilities of the suppliers and the beneficiaries as well as the technical aspects of the hydraulic machinery and conveyance systems used in the supply of water to the consumer. The sustainability of projects is also addressed.

Volume 5 – Human and Financial Resources

In this volume the learner is introduced to methods of human resource management, communication and conflict resolution and development and financial management.

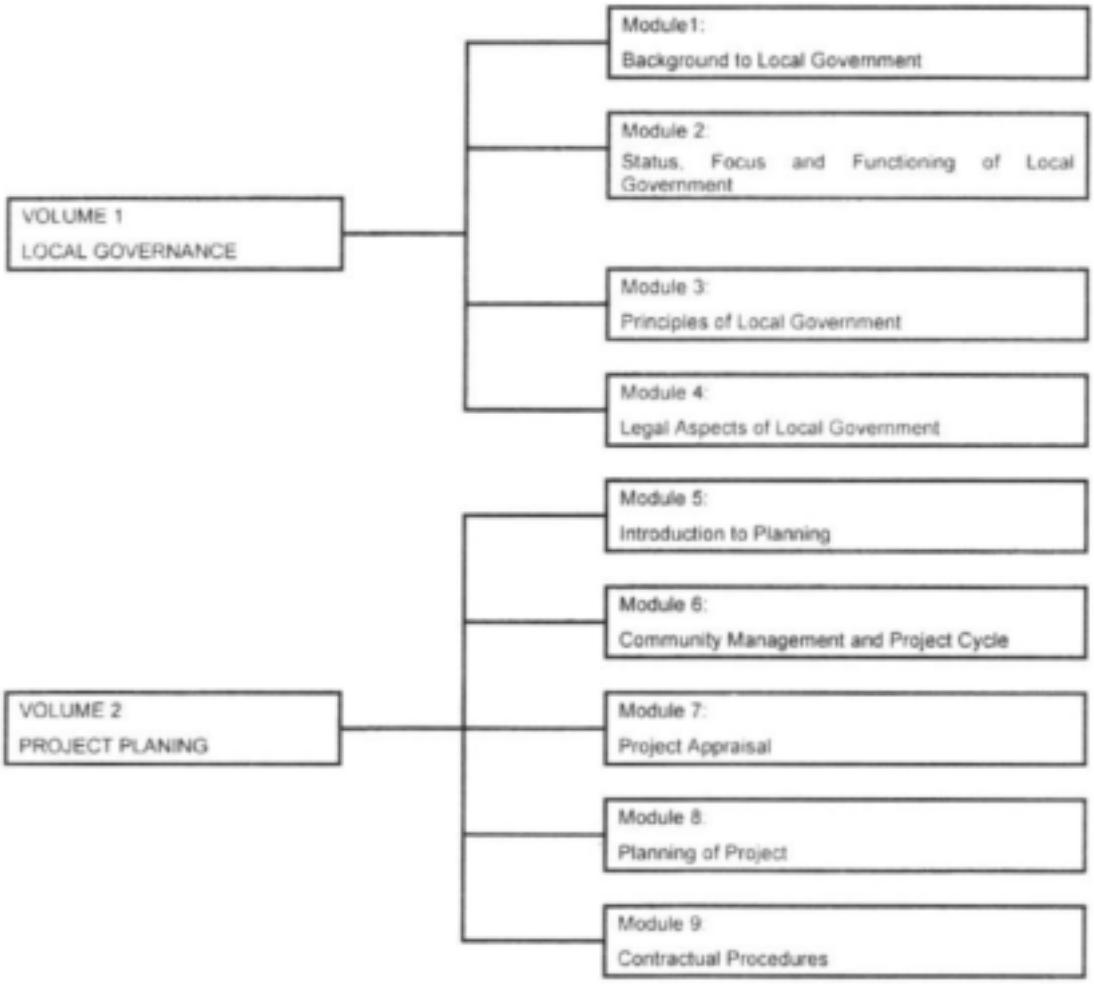
Volume 6 – Water Resource Management

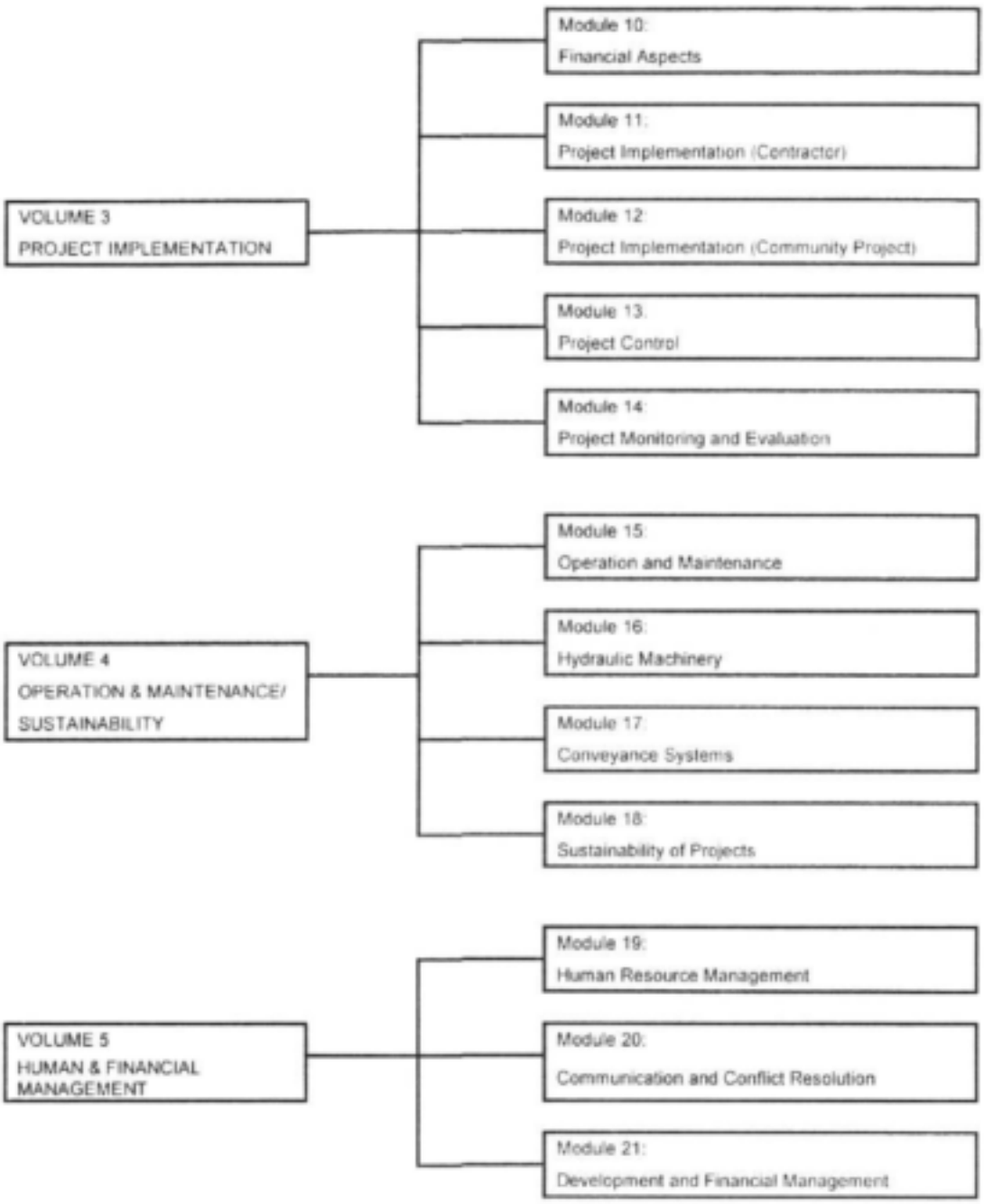
Volume 6 includes the management of water as a natural and an economic resource and also introduces the learner to the surface water and groundwater sources and the development of these sources. Water properties and quality and standard treatment processes are also discussed. To ensure a thorough understanding of these resources all relevant statutory and policy documents are referenced in this volume.

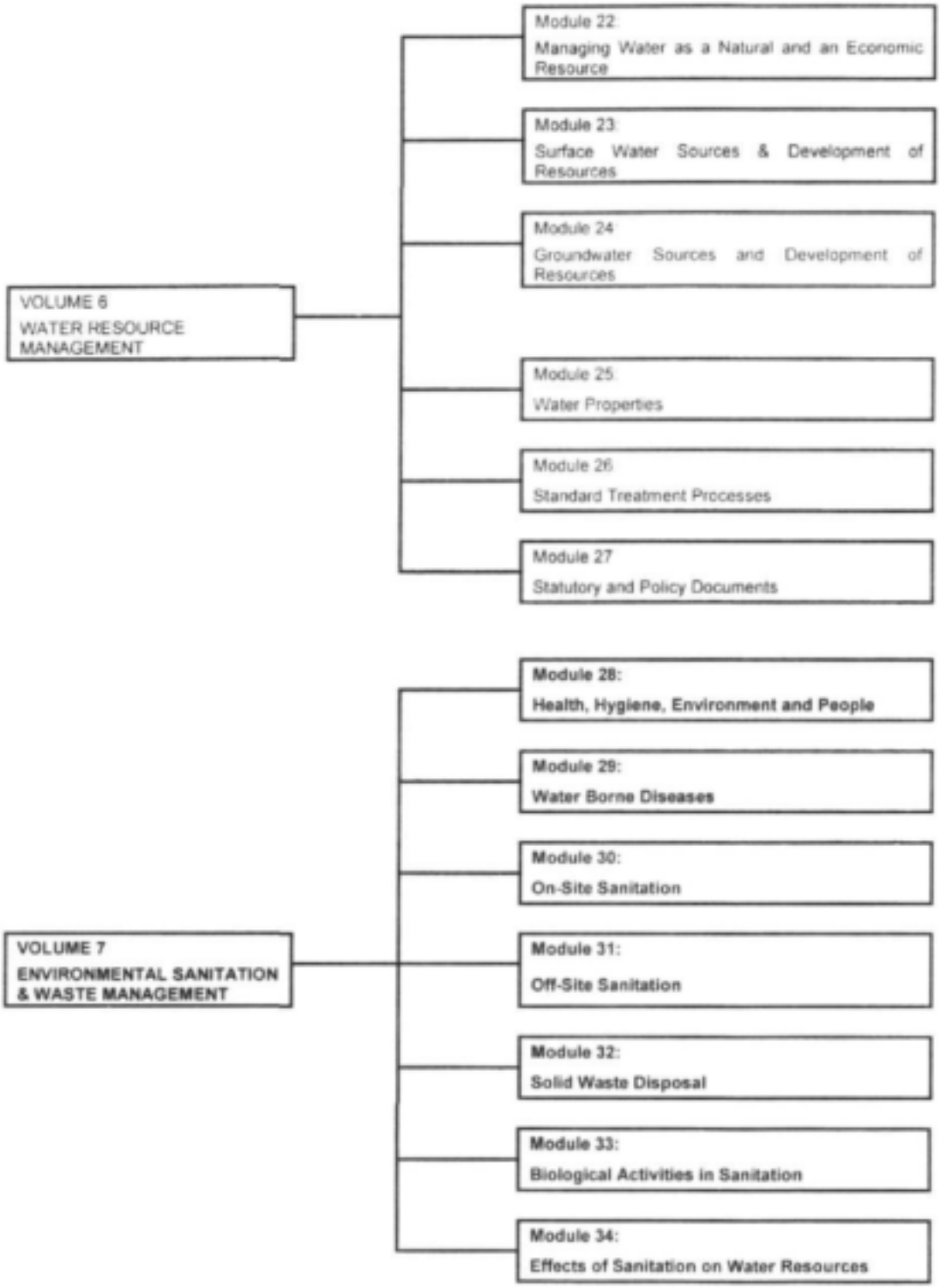
Volume 7 – Environmental Sanitation and Waste Management

For efficient environmental sanitation and solid waste management the following issues are addressed in the modules included in this volume namely the relationship between health, hygiene, environment and people, the spread of water borne diseases, off and on site sanitation options, solid waste disposal, the biological activities in sanitation and the effect of environmental sanitation and solid waste on our water resources.

Outline of learning material is as follows:




VOLUME 3
PROJECT IMPLEMENTATION
Module 10:
Financial Aspects
Module 11:
Project Implementation (Contractor)
Module 12:
Project Implementation (Community Project)
Module 13:
Project Control
Module 14:
Project Monitoring and Evaluation
VOLUME 4
OPERATION & MAINTENANCE/
SUSTAINABILITY
Module 15:
Operation and Maintenance
Module 16:
Hydraulic Machinery
Module 17:
Conveyance Systems
Module 18:
Sustainability of Projects
VOLUME 5
HUMAN & FINANCIAL
MANAGEMENT
Module 19:
Human Resource Management
Module 20:
Communication and Conflict Resolution
Module 21:
Development and Financial Management


VOLUME 6
WATER RESOURCE MANAGEMENT
Module 22:
Managing Water as a Natural and an Economic Resource
Module 23:
Surface Water Sources & Development of Resources
Module 24:
Groundwater Sources and Development of Resources
Module 25:
Water Properties
Module 26:
Standard Treatment Processes
Module 27:
Statutory and Policy Documents
VOLUME 7
ENVIRONMENTAL SANITATION & WASTE MANAGEMENT
Module 28:
Health, Hygiene, Environment and People
Module 29:
Water Borne Diseases
Module 30:
On-Site Sanitation
Module 31:
Off-Site Sanitation
Module 32:
Solid Waste Disposal
Module 33:
Biological Activities in Sanitation
Module 34:
Effects of Sanitation on Water Resources

National Community Water and Sanitation Training Institute trusts that the development of these documents and learning material will result in successful capacity building in the water supply and sanitation sector.

National Community Water and Sanitation Training Institute would like to take this opportunity to thank Water Research Commission for its support in the development of the training programme. A word of thanks to the steering committee for their positive contributions towards the project and to all other roleplayers who assisted in making this project a success.

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CHAPTER 1

INTRODUCTION

1.1. BACKGROUND TO THE WATER SUPPLY AND SANITATION SECTOR

South Africa is a semi-arid region with an uneven distribution of rain, therefore water will become scarce due to rapid population increases and demographic changes which will place additional pressure on the already limited water resources. It is a basic human right to have safe access to safe potable water and adequate sanitation facilities. The provision of water to a village or rural community is part of the total development and upliftment of that community.

"The development of our society, our growing population, and the legitimate demands of the disadvantaged majority for access to that most crucial natural resource - water - have placed new demands on what is, although renewable, a limited resource that can easily become polluted or over-used" (Prof. Kadar Asmal, 1997). In the White Paper on Water and Sanitation which was published on 15 November 1994, the government set itself a target of five to seven years to provide all South Africans with clean water and basic sanitation.

The provision and availability of clean water and sanitation to all South Africans is indispensable to the success of the government's Reconstruction and Development Programme (RDP). In line with this statement, the policy of the Department of Water Affairs and Forestry is to ensure safe, basic water supply and sanitation service to all South Africans. The backlog on supply is most noticeable in the rural areas of the country but "... this backlog (also) extends to the capacity of people to control and manage the services they need on a sustainable basis" (Guideline for Training and Capacity Building on Water Supply Projects, May 1997).

GEAR (1996) proposes a medium term strategy in which the backlog in the supply of municipal and rural services will be addressed. According to the Constitution the roles of Central Government in the water sector are "ensuring that services are provided while Local Government is tasked with the actual provision of services" (Guideline for Training and Capacity Building on Water Supply Projects, May 1997). Local Government should ensure that all communities have access to basic affordable services such as clean water, waste removal and sewage (White Paper on Local Government, March 1998).

"The gradual devolution of power from central government to local government is a (gradual) process and it will take a considerable time before local government departments are themselves fully empowered" (Guidelines for Training and Capacity Building in Sanitation Projects, December 1997). For all services to be administratively, financially and technically viable, capacity building within Local

Government is essential for empowerment of the people. Communities are to be serviced with basic water supply and sanitation infrastructure that will fully involve the Local Government and the community. This will enable the community can take ownership of the schemes and maintain them.

The White Paper on Water and Sanitation (1994) clearly spells out the role of capacity building and training in the water and sanitation sector as one of the decisive factors that will determine the successful implementation of the RDP at ground level. "The single most important factor in achieving wise and efficient water resource management is the training and development of the full potential of the people who will work in this sector. "The White Paper further states that "water resource management will only be successful if the personnel are developed not only in Department of Water Affairs and Forestry but in all relevant organisations and agencies, at all levels"

1.2. CAPACITY BUILDING AND TRAINING NEEDS IN THE WATER SECTOR

That capacity building and training needs within the water supply and sanitation sector is a very complex situation can be seen from the following statement. "Capacity building means the strengthening of beneficiary and institutional ability to undertake tasks. In the context of community water supply and sanitation, this includes the necessary functions of governance, service provision, increasing access to resources, improving power relationships between the parties involved, the general awareness of the local population regarding their services, development in general and the ability to secure an environment for promoting health" (Guidelines for Training and Capacity Building on Water Supply Projects May 1997).

One of the mechanisms presented by the White Paper to address the issue of capacity building in the water supply and sanitation sector was the establishment of the National Community Water and Sanitation Training Institute.

The National Community Water and Sanitation Training Institute (NCWSTI) was officially established on 10 September 1996 in accordance with a directive from the Minister of Water Affairs and Forestry. In the White Paper on Community Water and Sanitation the Minister of Water Affairs and Forestry, Prof. Kadar Asmal mandated the National Community Water and Sanitation Training Institute " *to build a national centre of expertise to address such issues as adult training and education methodology, assessment of the impact of education and training programmes, community training requirements, and training contents.*"

The mission of the National Community Water and Sanitation Training Institute is to build capacity in the community water and sanitation sector in collaboration with other key players by the empowerment of people through the development of competencies in an efficient and cost effective manner. In order to ensure the

attainment of its mission the NCWSTI has identified the following aims and objectives:

- The development and promotion of appropriate training and capacity building for the community based provision of water and sanitation infrastructure;
- The development of curricula, models and learning material on a national basis to work towards the standardisation and accreditation of courses ranging from community capacity building to technical and engineering aspects;
- The promotion of trainer training of members of implementation agencies and professional training organisations;
- The advocating of improved water and sanitation training to be offered by other educational institutions;
- The provision of support to enhance the training capacity of governmental and non-governmental bodies;
- Networking and linking with national and international training organisations to enhance the calibre of the Institute's training programme, and to offer information services based on research data and information;
- The provision of information to emerging role players in the water and sanitation sector through the provision of core publications;
- The provision of advisory and consultancy services covering both technical, non-technical, developmental and financial management aspects of water and sanitation.

To fulfil its aims and objectives the Institute recognises capacity building needs in the water sector. As these capacity building needs are extremely vast the focus of this document is guided by the Water Services Act, the National Water Act and the Reconstruction and Development of Water and Sanitation Programme. The Institute acknowledges the Green Paper on Local Government, however as the identification of capacity building needs will be an ongoing exercise, this document will be taken into consideration at a later stage.

The mission of the National Community Water and Sanitation Training Institute is to build capacity in the community water and sanitation sector. For successful development of a learning programme the following guiding principles for capacity building were identified:

- Various target groups which are empowered by capacity building, ensuring the confidence of the people to build on existing knowledge, acquire new life skills and to take control of their own destiny (refer1.2.1);
- Various developmental phases (refer 1.2.2); and
- Diverse levels of responsibility for the different roleplayers involved in the transfer scheme of DWAF (Refer 1.2.3).

The information gathered in the guiding documentation regarding the target groups, the various developmental phases and the levels of responsibility was used to develop the matrix in Chapter 2.

1.2.1 Target Groups

The first aspect to be considered when developing learning programmes is the people involved in the learning situation. The learners, known as the target group, must first be identified. For the purpose of this study current legislation was consulted for the identification of the target groups in the water and sanitation sectors.

The *Local Government Transition Act of 1993* stipulates which local government structures have the duty to provide access to services. The local government structure can be a:

- District or regional council;
- A regional services council;
- A rural council;
- A local council; or
- A metropolitan council.

The *Water Services Act (Act 108 of 1997)* states that everyone has the right to basic water supply and basic sanitation. To achieve this ideal the Act places a duty on all *water service institutions* to take reasonable measures to realise these rights. The Act also provides a framework for water service provision by defining the responsibilities and roles of different spheres of government. The Act identifies the following target groups which all form part of the *Water Service Institutions*:

- Water Service Authorities and Water Service Providers;
- Water Boards;
- Water Service Committees; and
- Water Service Intermediaries

Definitions of the above target groups, as per the Water Services Act 1997, will be given to clarify their meaning within the framework of this study:

"Water Service Authority:
means any municipality, including a district or rural council as defined in the Local Government Transition Act, 1993 (Act No.209 of 1993), responsible for ensuring access to water services;

Water Service Providers:
means any person who provides water services to consumers or to another water service institution, but does not include a water service intermediary;

Water Boards:
means an organ of state established or regarded as having been established in terms of this Act to perform, as its primary activity, a public function:

Water Service Intermediary:

means any person who is obliged to provide water services to another in terms of a contract where the obligation to provide water services is incidental to the main object of the contract;

Water Service Committees:

The minister may establish a water service committee.

No water service committee may be established if the water service authority having jurisdiction in the area in question is able to provide water services effectively in the proposed service area.

The following diagram illustrates the relationship between the Water Service Institutions and the identified target groups:

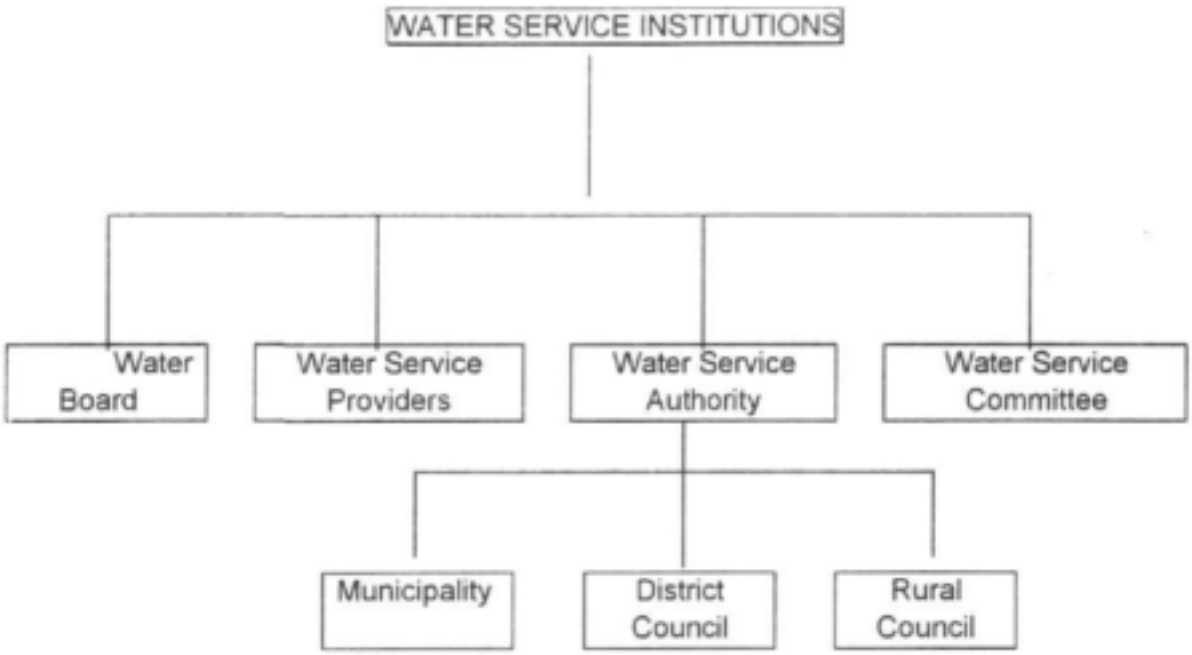


Figure 1.1 The relationship between the Water Service Institutions and the identified target groups

The *Reconstruction and Development of Water and Sanitation Programme (Programme 4, 1997/98)* identifies the following target groups:

- Project Steering Committees;
- Area Planning Forums;
- Project Implementing Agents
- Previously Disadvantaged Consultants and Contractors
- Local Government; and
- Water Boards.

The *National Water Act (1998)* recognises the need to achieve the sustainable use of water for the benefit of all users; the protection of the quality of water resources; and an integrated management of all aspects of water resources.

The Act identifies the following target groups:

- National Government
- Water Resource Managers
- Catchment Management Agencies
- Water Management Institutions

All these target groups are involved in one way or another in thedifferent phases of the project cycle namely: planning, implementation and operation and maintenance of water supply and sanitation. In the transfer of existing and planned schemes from the Department of Water Affairs and Forestry to Local Government, the Local Government structures have been tasked by the Constitution with the provision of local services

1.2.2. Developmental Phases

"Specific training and capacity building activities are deemed appropriate at various stages of the project cycle. The project cycle, therefore, has been designed to promote the integration of project related activities with capacity building requirements of the project" (Guideline for Training and Capacity Building on Water Supply Projects). Department of Water Affairs and Forestry identified the following stages of the project cycle as areas/phases in which capacity building and training are necessary:

- planning phase;
- implementation phase;
- operation and maintenance phase; and
- ongoing monitoring and evaluation phase.

1.2.3. Levels of Responsibility

The various target groups have diverse levels of responsibility within the different developmental phases namely planning; implementation; operation and maintenance; and monitoring and evaluation.

The following matrix was developed to demonstrate the diverse levels of responsibility of the target groups to the various developmental phases. It takes into account the various levels of responsibilities required by each of these target groups in each of the developmental phase. In order to perform their duties in terms of the Water Services Act, the National Water Act and the Reconstruction and Development of Water and Sanitation Programme each target group will have to achieve certain outcomes. In the matrix it is recognised that the learning requirements, to generate the required outcomes will differ for each target group, as these learning requirements are dependent on the gap analysis which will be determined by the Threshold Matrix (refer Chapter 3.2.3.4).

1.3. CONCLUSION

Capacity building and training needs in the water sector were recognised. This led to the establishment of the National Community Water and Sanitation Training Institute to achieve the adequate building of capacity within the water and sanitation sector.

To achieve its mission the NCWSTI identified the need for developing relevant learning programmes. To develop learning programmes relevant to the needs the following elements were identified; Target groups, developmental phases and levels of responsibility.

In the following chapter the target groups and their relevant tasks are recognised. Outcomes for each task were then identified and all information is presented in the form of a matrix.

CHAPTER 2

TARGET GROUPS, TASKS, AND IDENTIFIED OUTCOMES

2.1. IDENTIFICATION OF TARGET GROUPS, TASKS AND IDENTIFIED OUTCOMES

This chapter will focus on the identification of the various target groups, and the tasks they need to perform within the water supply and sanitation sector in South Africa.

The National Community Water and Sanitation Training Institute (NCWSTI) aims to develop (Mission 1997):

- appropriate training and capacity building for the community based development in water supply and sanitation on a national basis; and
- curricula, models and material on a national basis to work towards standardisation and accreditation of water supply and sanitation courses, ranging from community capacity building to technical and engineering aspects.

To fulfil these aims a study was made of recent legislation and documentation from Department of Water Affairs and Forestry, namely the White Paper on a National Water Policy for South Africa, The Water Services Act, National Water Act and the Reconstruction and Development on Water Supply and Sanitation (DWAF, April 1997) and The White Paper on Local Government for the identification of:

- target groups who are responsible for the supply of water and sanitation in South Africa; and
- tasks assigned to each target group for the successful fulfilment of their responsibility.

The range of the tasks is extensive and therefore the difficulty to determine all tasks must be recognised. This exercise however provides the basis for co-ordination of education and training in the water and sanitation sector and the development of new learning programmes. After identification of the tasks, the NCWSTI identified the outcomes needed to accomplish these tasks competently.

A matrix was developed using the identified target groups, their tasks as specified in the current legislation and the identified specific outcomes for each task.

Target Groups
These were identified using current legislation. Tasks were identified for various target groups involved in the supply of community water and sanitation services. However certain target groups, not relevant to this project but of importance in the water and sanitation sector, were identified but tasks were not noted.

Tasks

The tasks were identified using current legislation. This document serves only to demonstrate the vast scope of tasks identified and does not claim that the identified task list, to be performed by the target groups, is complete.

Identified Outcomes

The levels of responsibility carried by the various target groups were identified in the survey done on aforementioned legal documents. These responsibilities were then translated into outcomes. NCWSTI however acknowledges that the outcomes identified for the target groups should be refined in consultation with the relevant roleplayers. However the NCWSTI is confident that the tasks and outcomes identified for Local Government Training Programme is complete as inputs from various roleplayers in the water and sanitation sector and from the learners involved in the learning programme have been incorporated into the development of the relevant programme.

2.2. MATRIX

TABLE 1. TARGET GROUPS, TASKS and IDENTIFIED OUTCOMES

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES

TARGET GROUP **(as per legislation)**	TASK	IDENTIFIED OUTCOMES
A. WATER SERVICE AUTHORITIES	**A.1. FINANCIAL EFFICIENCY**	To be financially efficient the target group should: understand the financial policy of the water service authority be able to manage current and fixed assets be able to manage current liabilities understand and perform general ledger maintenance understand the management of assets have an understanding of financial management understand the importance of budgets understand the financial reporting of the water service authority be able to prepare capital and operating budget programmes have knowledge of cash management understand accounting records and database understand financial statements and information be able to prepare salaries

	A.2. **TARIFF SETTING**	The target group should : understand tariff setting in the context of current legislation identify factors that need to be considered during tariff setting be able to do tariff formulation understand billing administration perform receipting be able to control credit be able to do accurate metering understand community management be able to set tariffs: • Lifeline • Consumption • marginal costs
	A.3. WATER SERVICES DEVELOPMENT PLAN	The target group should : Be able to draw up a water services development plan Be able to make an informed decision regarding staffing issues Be aware of labour intensive methods which can be employed Be able to apply the recruitment policy

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
	A.4. COMMUNICATION	The target group should: be able to differentiate between types of communication be empowered to do public speaking understand small group communication be able to write reports
	A.5 GOVERNANCE	The target group should: Know the different spheres of government Know the different Local Government structures Understand the role of Local Government in relation to the water sector Understand the status, focus and functioning of Local Government Understand the principles of Local Government
	A.6 LEGAL ASPECTS	The target group should: understand all legislation and documentation relevant to the water and sanitation sector

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
	A.8 RELIABILITY OF WATER SUPPLY	The target group should: understand the hydrological cycle have knowledge of surface water have knowledge of groundwater be aware of emergency situations that can occur know the legislation governing the water reserve be able to understand yields from water sources be aware of methods of alternative ways to provide access to water be aware of the availability of conventional water resources be able to make an informed choice on alternative water resources
	A.9 CONSERVATION AND ENVIRONMENTAL ISSUES	The target group should: be aware of water conservation methods be aware of the impact of water on the environment

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
	A.10. WATER QUALITY FOR POTABLE WATER	The target group should: understand the methods used to ensure good quality water be able to interpret the results of basic tests be introduced to the dangers of water that does not meet standards for potable water
	A.11. INDUSTRIAL SUPPLY	The target group should: be able to differentiate between water suitable for potable use and water used in industries be familiarised with methods used for purification of water for industrial use
	A.12. RETICULATION NETWORKS	The target group should: be familiar with the physical operation of reticulation networks have knowledge of the operation and maintenance of water meters have knowledge of the financial aspects of water metering
	A.13.TRANSFER OF SCHEMES	The target group should: understand the transfer procedure be able to make an informed choice for water supply

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
	A.14. INDUSTRIAL WASTE	The target group should be able to identify problems caused by industrial waste be able to make an informed choice about the suitability of waste discharge into water sources
	A.15. RECYCLING	The target group should: be aware of the advantages of recycling be familiar with recycling process understand the health implications of recycling water
	A. 16. TOILET DESIGNS	The target group should: be able to recognise problems related to toilet designs be able to assist the community in making an informed choice regarding toilet designs

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
	A.17. PLANNING	The target group should be familiar with the following: □ macro level and micro level planning □ core aspects of planning □ issue identification □ information assimilating □ problem solving methods □ action plans □ financial aspects of planning a project □ project appraisal □ cash flow and taxes □ liquidity & sustainability □ project budgeting □ planning procedures □ contractual procedures

	A.18. DECISION MAKING	The target group should: have a basic knowledge of the area plan be able to know how to make an informed choice by considering all options be able to help the community to make an informed decision so that they can take ownership of the project be have sufficient knowledge of water supply and sanitation projects so that technical experts do not make decisions for the community

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
	A.19. PROVIDING	The target group should : have knowledge of the following aspects of providing and discuss them with the community: □ cost and practicability □ financial and technological □ managerial □ socio-economic □ conservation benefits

	A.20. IMPLEMENTATION (CONTRACTOR)	The target group should have an understanding of the following: □ access to site and commencement □ project programme and performance monitoring □ project specifications and quality control □ measurement and payment □ certificates of completion
	A.21. IMPLEMENTATION (COMMUNITY)	The target group should have knowledge of the following: □ implementation checklist □ implementation steps □ resource management and leadership □ retention □ project procurement management □ project control □ project monitoring and evaluation

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES

	A.22. OPERATION AND MAINTENANCE	The target group should have knowledge on the operation and maintenance of the system specific to the area of supply. The following information should be understood by the participants: - facilitating the operation of water schemes - obligations of service providers - obligations of service beneficiaries - facilitating the maintenance of systems - facilitating the emptying of pits and digesters

TARGET GROUP (as per legislation)	**TASK**	**IDENTIFIED OUTCOMES**

B. SERVICE PROVIDERS	**B.1.ADMINISTRATION**	The target group should understand the principle of office administration be able to manage the physical assets of the service provider have knowledge of the following so as to know how to manage people: □ human resources management □ industrial psychology □ communication □ organo- structures □ project management
	B.2.**FINANCIAL** EFFICIENCY	The target group should: understand the financial policy of the water service authority be able to manage current and fixed assets and current liabilities understand and perform general ledger maintenance understand the management of assets have an understanding of financial management understand the importance of budgets understand the financial reporting of the water service authority be able to prepare capital and operating budget programmes have knowledge of cash management understand accounting records and database understand financial statements and information and be able to prepare salaries

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
	B.3. COMMUNICATION	The target group should: be able to differentiate between types of communication be empowered to do public speaking understand small group communication be able to write reports
	B.4. GOVERNANCE	The target group should: Know the different spheres of government Know the different Local Government structures Understand the role of Local Government in relation to the water sector Understand the status, focus and functioning of Local Government Understand the principles of Local Government

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
C. WATER SERVICE INTERMEDIARIES eg. Mines	**C.1. QUANTITY**	The target group should: have the necessary numeracy skills to be able to quantify water
	C.2. QUALITY	The target group should: be able to differentiate between potable and wastewater qualities be able to interpret the results of the physical, bacteriological and chemical quality tests
	C.3. SUSTAINABILITY	The target group should: know the key elements of sustainability understand the demand and willingness to pay understand cost recovery be able to implement cost recovery

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
D. WATER BOARDS	**D.1. PROVISIONING**	The target group should know how to: provide water to the consumers provide management services provide catchment management services supply industrial water accept industrial water The target group should: be aware of water limitation regulations know discontinuance procedures know how to prevent unlawful and wasteful uses of water
	D.2. REPORT WRITING	The target group should: Acquire relevant communication skills be able to write reports

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
	D.3. **TARIFF SETTING**	The target group should : understand tariff setting in the context of current legislation identify factors that need to be considered during tariff setting be able to do tariff formulation understand billing administration perform receipting be able to control credit be able to do accurate metering understand community management be able to set tariffs: ? Lifeline ? Consumption ? marginal costs
	D.4. CONTRACTS	The target group should have knowledge of: contract documentation

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
	D.5. TECHNICAL ASPECTS	The target group should have knowledge concerning the following issues: ❖ demand patterns ❖ water storage ❖ units and standards of measurement ❖ verification of meters ❖ procedures for dispute settlement ❖ Installation of equipment ❖ alteration of equipment ❖ operation of system
	D.6. MEETING PROCEDURES	The target group should understand and be able to apply: meeting protocol meeting procedures

	D.7. FINANCIAL ASPECTS	The target group should have knowledge of the financial aspects related to the following issues: • protection • capital costs • operational costs • maintenance costs • depreciation of assets • cost recovery • future capital requirements

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
E. WATER SERVICE COMMITTEES	**E.1. PROVISIONING**	The target group should know how to: provide water to the consumers provide management services provide catchment management services supply and accept industrial water The target group should: be aware of water limitation regulations know discontinuance procedures know how to prevent unlawful and wasteful uses of water

	E.2. ESTABLISHMENT OF COMMITTEES	The target groups should: Understand constitution formulating and adoption know how committees work be familiar with meeting procedures know code of conduct during committee meetings

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
	E.3. COMMUNITY INVOLVEMENT	The target group should: understand key elements of sustainability understand demand and willingness to pay understand why users should pay for water and sanitation services have knowledge of the philosophy of community management

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
F.CATCHMENT MANAGEMENT AGENCIES- **RESPONSIBLE AUTHORITY** ***(INCLUDES LOCAL AUTHORITIES)***	**F.1. CATCHMENT MANAGEMENT**	To be determined in collaboration with relevant roleplayers
	F.2. WATER ALLOCATION PLAN	To be determined in collaboration with relevant roleplayers

	F.3. USE OF WATER	The target group should understand the: protection of water resources use of water resources development of water resources conservation of water resources management of water resources control of water resources storing of water impeding and diverting river flow stream flow reduction recreation

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
	F.4. CLASSIFICATION OF WATER RESOURCES	The target group should be able to classify water resources under the following headings: class quality reserve

	F.5. WATER SERVICES DEVELOPMENT PLAN	The target group should be able to set out: strategies objectives plans guidelines procedures of catchment management agencies
	F.6. GENERAL ISSUES	The target group should have knowledge of the following: geology demography land use climate vegetation report writing
TARGET GROUP (as per legislation)	**TASK**	**IDENTIFIED OUTCOMES**

	F.8. WASTE ASPECTS	The target group should have knowledge of: waste disposal into rivers waste standards for quality, quantity and temperature treatment of waste before discharge: ? outcome ? monitoring ? analysing ? prescribed methods ? volumetric determination of stream flow reduction activity

G. WATER RESOURCE MANAGEMENT

This target group was identified but as they do not form part of this study, tasks and outcomes were not identified.

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
H. AREA PLANNING FORUMS	H. 1. PROVISION OF SERVICES	The target group should : have knowledge of the following aspects of providing and discuss them with the community: ? cost and practicability ? financial and technological ? managerial ? socio-economic ? conservation benefits
	H.2. MANAGEMENT OF SERVICES	The target group should be able: Identify Facilitate Plan and Implement water and sanitation projects
	H.3. OPERATION AND MAINTENANCE	The target group should have knowledge on the operation and maintenance of the system specific to the area of supply. The following information should be understood by the participants: • facilitating the operation of water schemes • obligations of service providers • obligations of service beneficiaries • facilitating the maintenance of systems • facilitating the emptying of pits and digesters

TARGET GROUP (as per legislation)	TASK	IDENTIFIED OUTCOMES
I. PROJECT STEERING COMMITTES	I.1. DECISION MAKING	The target group should: have a basic knowledge of the area plan be able to know how to make an informed choice by considering all options be able to help the community to make an informed decision so that they can take ownership of the project be have sufficient knowledge of water supply and sanitation projects so that technical experts do not make decisions for the community
	I.2. PROJECT IMPLEMENTATION	The target group should have an understanding of the following: □ access to site and commencement □ project programme and performance monitoring □ project specifications and quality control □ measurement and payment □ certificates of completion The target group should have knowledge of the following: □ implementation checklist □ implementation steps □ resource management and leadership □ retention □ project procurement management □ project control □ project monitoring and evaluation

J. CONSULTANTS AND CONTRACTORS

This target group was identified but as they do not form part of this study, tasks and outcomes were not identified.

K. PROJECT IMPLEMENTING AGENTS

This target group was identified but as they do not form part of this study, tasks and outcomes were not identified.

2.3. CONCLUSION

In this chapter the various target groups involved in the supply of community water and sanitation were identified. The levels of responsibilities, certain of these targets groups are carrying, were identified using current legislation. These levels of responsibilities were then translated into outcomes.

NCWSTI acknowledges the need for capacity building for all these target groups, but this document will address only the needs of Local Government in the phases namely; Planning; Implementation; Operation and Maintenance; and Monitoring and Evaluation.

CHAPTER 3
DEVELOPMENT OF LEARNING PROGRAMME FOR

MANAGEMENT OF COMMUNITY WATER AND SANITATION
A LOCAL GOVERNMENT TRAINING PROGRAMME

A learning programme can be defined as:

Relevant unit standards as well as possible learning materials and methodology by means of which learners can achieve agreed learning outcomes (Green Paper on FET).

The setting of unit standards is crucial but in view of the developments regarding the process for the development of unit standards, it is recognised that the setting of the unit standards for this learning programme will have to be a separate process. The development of the learning programme for this document will however concentrate only on the learning materials and methodology (curriculum) used to allow the learners to achieve the agreed learning outcomes.

This chapter deals with the need for and the development of a learning programme for the identified target group namely the councillors and officials of the Local Government. The need for the development of similar learning programmes for the other target groups has been recognised but a separate process will have to be embarked upon to develop these learning programmes.

3.1. LOCAL GOVERNMENT'S ROLE WITH REGARDS TO THE WATER SECTOR

3.1.1. Background

"A water service authority is the local government structure that has the duty to provide access to water services in a specific area. The Local Government Transition Act, 1993 stipulates which local government structure has the duty to provide access to services. It may be a district/regional council, a regional services council, a rural council, a local council or a metropolitan council" (An Introduction to the The Water Services Act ,1997).

The responsibility for the provision of water supply and sanitation services is unambiguously vested in the third tier of government. It is therefore essential that Local Government members are empowered with sufficient knowledge to permit them to function competently as planners, managers and administrators, and to be able to communicate on a basis of equality with other role players in

the industry.

The need for training and capacity building of the councillors and officials of the Local Government was identified and in order to build this capacity the necessity for a learning programme specifically aimed at the needs of the councillors and officials, tasked with the supply of water and sanitation, was identified.

3.1.2. Need for Development of a learning programme for Local Government

The need to develop a learning programme and offer training in water and sanitation to the Local government structures is based on the following premises:

- The constitution places the responsibility for the delivery of services on local government. The provision of services includes all activities such as needs assessment, planning, budgeting, the appointment of consultants, the adjudication of tenders and awarding of contracts, the commissioning of services, and the employment of staff for administration, operation and maintenance. At present however, a major problem exists in this regard as members of the local governments structures do not have the necessary resources, capacity knowledge or skills to comply with their constitutional obligations and deliver services to their people.

- The absence of well defined goals and standards for training in the fields of water and sanitation in South Africa has resulted in the creation of a plethora of fragmented training programmes and initiatives. Poor levels of communication and liaison between the various training organisations and interest groups characterise the water and sanitation sector. No forums exist for the co-ordinated planning and assessment of the various training courses being offered. Consequently course contents, duration, standards and techniques vary considerably. Furthermore, it is evident that most of the courses have become inappropriate in terms of the present and future needs of the water and sanitation sector.

- The nature of training and accreditation thereof has been ignored in most of the programmes to date. This has made it difficult if not impossible for acquired skills to be transported, hence limiting the opportunities available to the individuals trained by such programmes.

Present legislation and documentation also focuses on the need for the development of learning programmes to build capacity within the water and sanitation sector.

3.1.3. Legislation and Documentation used in the Development of the Learning Programme for Local Government

To be able to develop a learning programme relevant to the needs of the councillors and officials of the Local Government the following legislation and documentation was used as guidelines in the development of Management of Community Water and Sanitation: A Local Government Training Programme.

- In the Water Services Act (1997) the Local Government are tasked with the provision of water supply and sanitation. The Minister, in the Water Services Act has set national standards for:

  - The provision of water services;
  - The quality of water taken from or discharged into any system;
  - The effective and sustainable use of water resources for water service quality;
  - The nature, operation, operational efficiency and economic viability of water services;
  - The requirements for persons who install and operate water service works;
  - The construction and functioning of water services works and consumer installations.

- The Department of Water Affairs and Forestry "*Guidelines for Training and Capacity Building on Water Supply Projects*" proposes the development of management at local level through capacity building and training initiatives that promote financial, administrative, communication and good governance skills.

- The National Water Act (1998) provides for a national water resource strategy that provides the framework for the protection, use, development, conservation, management and control of all the countries water resources. It also deals with the Reserve, the basic human needs reserve and the ecological reserve.

- The Reconstruction and Development Programme 4 Business Plan (1997/1998) indicates that the department "... is to ensure that communities are serviced with basic water supply and sanitation infrastructure which is provided in a manner which fully involves the Local Government and community such that the community both owns the schemes and is able to operate and maintain them.

In view of the above needs analysis and present legislation and documentation a learning programme was developed for the councillors and officials responsible for the water supply and sanitation sector of Local Government.

3.2. CURRICULUM FRAMEWORK

Methods and content together make up the curriculum (Rogers) but the curriculum framework is both the philosophical and organisational framework for a specific curriculum (Green Paper FET). Curriculum framework therefore focuses not only on the development of specific learning programmes, courses and material but also on the methods of learning, training and assessment that may be adopted.

Based on the guidance of the definition of the curriculum framework the following guiding principles were taken into account and applied in the development of the learning programme: *Management of Community Water and Sanitation, A Local Government Training Programme.*

- Education of Adults
- Integrated and Outcomes Based Approach to Education and Training
- Modular structure of Learning Material
- Participatory Methods of Training
- Assessment and evaluation

These guiding principles will be defined and their application, relevant to the learning programme, will be discussed in the following paragraphs.

3.2.1. Education of Adults

"The facilitation of learning – assisting adults to make sense of and act upon the personal, social, occupational, and political environment in which they live – is an important, exhilarating, and profound activity for both facilitators and learners" (Brookfield).

"When considering adult learning and the teaching of adults one should always take into account the complexities of the interaction between adult learning and the life context of adults" (RAU, 1997). The development of the learning programme was guided by the following principles of adult learning:

- Understanding the adult learner;
- Adult learning; and
- Curriculum models applicable to the education of adults.

3.2.1.1. Understanding the Adult Learner

To be successful the facilitator should have an understanding of the adult learner. The following factors regarding the adult's learning should be considered (TSA, 1997):

- the adult's learning is self-directed;
- the adult's learning has a rich experience base;
- the adult's learning has a need to address real life problems;
- the adult's learning should be applicable immediately.

Adults bring a wide variety of accumulated life experiences into the class situation. It is important that the facilitator helps the adults explore this existing knowledge, link their existing knowledge to new material and thereby help the adults to reflect on their existing knowledge that may obstruct meaningful learning.

3.2.1.2. Adult Learning

Adults learn best when:

- Learners are actively involved and accept a share of the responsibility for planning and operating a learning experience. They will have a feeling of commitment towards it.
- Learners get regular, supportive feedback that provides encouragement, reinforcement and a sense of progress towards their goals.
- The learning environment is characterised by physical comfort, mutual trust and respect, mutual helfulness, freedom of expression and acceptance of differences. Safety and respect are important considerations.
- Learning is useful and practical as it concerns problems encountered in everyday life.
- The learning process is related to and makes use of the experiences of the learners.
- Problems can be discussed openly and frustrations and conflicts resolved.

3.2.1.3. Curriculum Model Applicable to the Education of Adults

The learning programme envisaged for the Local Government structures is developed in relation to the overall purpose that the learner wishes to achieve. The curriculum focuses on specific outcomes, methods of learning, teaching and assessment that may be adopted, as well as the development of specific learning programmes, courses, and materials.

Various curriculum models have been developed but this model developed by Jarvis (1995) was applied to the development of the learning programme.

Figure 3.1. Curriculum Model Applicable to the Education of Adults

The application of the curriculum model assures continuum within the learning programme. The outcomes, learning material, assessment and methods and organisation within the learning programme are all independent units that are totally interdependent.

3.2.1.4. Application of Principles Applicable to Adult Education to the Learning Programme

The learning programme was developed on the basis that the target group will be adults and therefore all principles of adult education will be applicable. The fact that the adult's learning has a need to address real life problems and that learning should be applicable immediately was addressed in the development of the learning programme. The learning programme is designed to meet the immediate needs of the councillors and officials by capacitating them to make informed choices when confronted with problems in the performance of their tasks.

In the development of the learning material it was assumed that the target group had no previous knowledge of the management of community water and sanitation. However the gap analysis should be performed on each group of learners to determine their existing knowledge and experience base. It will then be the responsibility of the facilitator to build on this existing knowledge and experience of the learners.

The facilitator must constantly be conscious of the principles of adult learning and apply these within the learning situation if learning is to take place. However the facilitator must also consider the other guiding principles of the curriculum framework such as the integrated approach to education and training, modular structure of the learning material, participatory

methods of training and assessment.

3.2.2. Integrated and Outcomes Based Approach to Education and Training

3.2.2.1. Definition

"Education and training should form part of a system of human resources development which provides for the establishment of an integrated approach to education and training which is expressed in terms of nationally acceptable qualifications (National Training Board, 1994). An integrated approach to education and training should be a core principle. To achieve this "... learning should be articulated in a continuum of opportunities, and the equivalence and portabilty of qualifications should be assured with NQF" (Report of National Committee on Further Education).

For qualifications to be assured with NQF the outcomes are expressed as unit standards on the NQF. An outcomes based approach should be adopted, "... that is the specification of what a learner can do at the end of a learning experience. This includes skills, knowledge and values which inform the demonstration of the achievement of an outcome or set of outcomes" (Report of the National Committee on Further Education).

3.2.2.2. Application of integrated and Outcomes Based Approach to Education and Training to the Learning Programme

As discussed previously the setting of unit standards is recognised as crucial for the qualification to be assured with NQF. However in view of the developments regarding the process for the development of unit standards, it is recognised that the setting of the unit standards for this learning programme will have to be a separate process.

3.2.3. Modular Structure of Learning Material

A modular structure used in the development of learning material allows for flexibility in the choice of relevant modules for a specific target group. The following elements used in developing the learning material structure will be discussed in more detail:

- Schematic representation of learning material structure;
- Guidelines used in the development of modules;
- Development of modules; and
- The Learning Needs Analysis.

3.2.3.1. Schematic Representation of Learning Material Structure

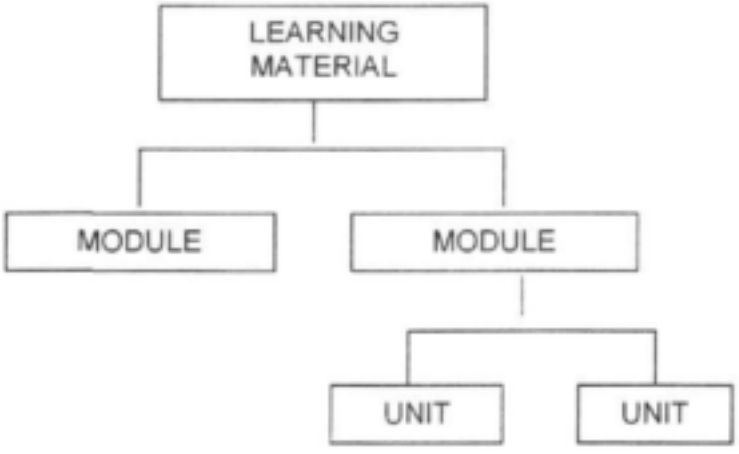


Figure 3.2. Learning Material Structure

3.2.3.2. Guidelines used in the Development of Modules

Guidelines used in the development of the modules and units of learning are contained in the White Paper on National Water Policy for South Africa (1996) Water Services Act (1997); The Department of Water Affairs and Forestry "*Guidelines for Training and Capacity Building on Water Supply Projects*"; The National Water Act (1998) and The Reconstruction and Development Programme 4 Business Plan (1997/1998) (refer Chapter 3.1.3)

3.2.3.3. Development of Modules

"Modular learning programmes allow for greater flexibility as they break programmes into coherent segments of knowledge and skills and ... can be combined according to the needs of the learners" (Report of the National Committee on Further Education). The length and timing of a module should be flexible, that is it will be informed by the needs of the target group, the nature of the programme and the intended outcomes. Learners should have the freedom to go through the training at their own speed until the desired outcomes have been achieved. The modular approach allows for this freedom.

After careful consideration of the level of responsibility required by Local Councils in the water supply and sanitation sector the relevant modules were developed. The aim of the learning programme is to build adequate knowledge among the councillors and officials of the Local Government to enable them to make well informed decisions in the field of planning, implementation, operation and maintenance and monitoring and evaluation of water and sanitation projects. For further information with regards to the modules please refer to Chapter 4.

Before any decision regarding the choice of relevant modules to be used for training can be made and training commences, a learning needs analysis needs to be done using the threshold principle.

3.2.3.4. Learning Needs Analysis

The level of responsibility for each group is governed by the present legislation. However it is important to do a learning needs analysis to determine the issues and problems that need to be addressed. As the target group are adults it is important to establish the skills already held and what the gaps are between the requirements for the job and the skills already held.

Using the information from the needs analyses, the deficiencies/gaps can be determined, using the threshold principle, based on the present level of knowledge of the learners and the level of responsibilities required.

As an example in Figure 3.3. gaps "a" and "b" would need to be determined by pre-assessment in the needs analysis.

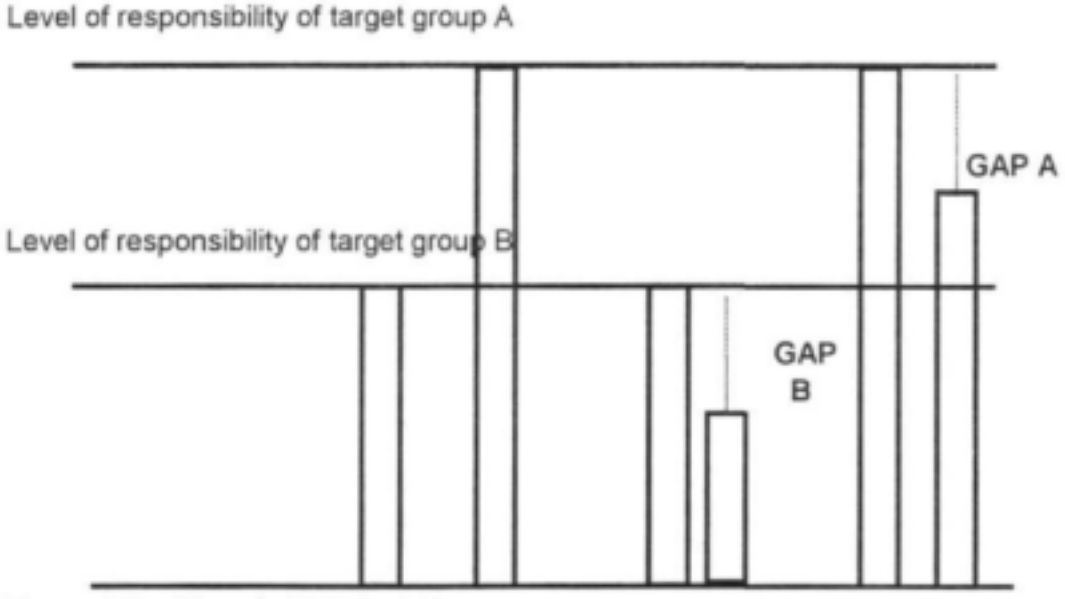


Figure 3.3. Threshold Principle

The learning needs analyses should be determined through interaction and workshops with individuals. Individual orientation would have to be considered during the interacting process.

3.2.3.5. Application of Modular Structure of Learning Material in the Development of the Learning Programme

A modular structure has been adopted in the development of the learning material as this allows for flexibility in the choice of relevant modules for a specific target group after the gap analysis has been done. The learning material has been divided into 34 modules to allow for maximum flexibility.

After development of learning material the facilitator needs to present this learning material to the learners. For facilitation to be successful participatory methods of training need to adopted.

3.2.4. Participatory Methods of Training

The dialogic approach has the following characteristics (RAU, 1997):

- Knowledge is jointly constructed by learners and facilitator;
- Learners are active constructors of knowledge; and
- Facilitators are co-learners and guides.

As the facilitator's aim is to assist the adult learner to learn, both learners and facilitator must be active participants in the learning process, that is all participants learning from each other. Participatory methods are prescribed as they:

- Assist people to learn through personal discovery.
- Stimulate people to contribute how they feel and think about a topic.
- Empower people and move learning forward into action.

Facilitators however differ in respect to personalities, abilities and talents therefore one method cannot be forced onto anyone. The facilitator must decide on the method to be used. For the learning process to be successful the facilitator must choose teaching methods suitable to his/her character, as the facilitator must feel comfortable within the learning situation.

3.2.4.1. Participatory methodologies

Participatory methods are too many and too varied to be discussed in detail therefore these proposed training techniques are only a guide to be used for the learning programme: *Management Of Water And Sanitation: A Local Government Training Programme*. However it must always be remembered that all training techniques used must be participatory in nature.

Training should always be **learning**-centred and not teacher- or learner-centred. Methods of learning individuals choose are linked to their way of thinking. Some learners predominantly use one sense while others use

different senses at different times. A training programme should therefore appeal to the following three main senses:

- Visual – the learners likes to see the material
- Auditory – the learner likes to hear the material
- Kinaesthetic – the learner learns by doing and experiencing

The methodology and advantages of the following participatory techniques for training are discussed in more detail:

- group work
- discussions
- project methods
- brainstorming
- roleplay and simulation
- presentation by learners
- field trips
- case studies
- laboratory work
- map making
- PHAST
- SARAR

For the purposes of the learning programme: *Management Of Water And Sanitation: A Local Government Training Programme* a combination of methods is proposed for effective facilitation.

Even though some of the proposed training methods are generic they can be adapted for and applied to the learning situation by the facilitator.

3.2.4.1.1. Group Work

If a discussion involves a small number of learners (5-7 per group) it may be called group work. Within the group, discussion is the major means of communication. Group work can occur within or outside the classroom situation.

Special attention must be paid to:

- seating arrangements for group work
- size of the group;
- composition of group;
- nature of tasks;
- amount of time for the task; and
- use of group products.

Give learners the maximum possible scope to choose the group in which they would like to work. This ensures a feeling of belonging to the group.

Group work has the following advantages;

- It encourages learners to talk, developing communication skills;
- It develops intellectual and professional competencies;
- Development of personal growth of students.

3.2.4.1.2. Discussions

There are three phases to a discussion. The facilitator's task changes as the discussion moves through these phases.

Phase 1. Set the climate:
Make the group feel at ease
State the purpose clearly and concisely
Explain the discussion procedure and define its limits

Phase 2. Guide the discussion:
Encourage participation by all members
Deal tactfully with irrelevant contributions
Keep the discussion focused and moving
Summarise frequently.

Phase 3. Summarise the discussion:
Review conclusions and highlights
Restate – this clarifies what has been accomplished
End on a high note.

The following advantages can be attributed to the discussion:

- It varies the pace of learning;
- It helps learners feel secure;
- It develops problem-solving skills; and
- It develops communication skills.

3.2.4.1.3. Project method

The facilitator must initiate the problem by arranging a discussion as this involves the learners, motivates the learners, creates inspiring group climate and encourages all learners to pull their weight in the group attempt.

With the assistance of the learners the facilitator should formulate questions on the topic being discussed and then allow the learners to give ideas on methods for the investigation. These ideas are noted e.g.

Topic: Water
Problem: How is the water stored?
Investigation Method: Obtain plans of dams and underground pipelines.
Calculate the volume of reservoirs.

Divide learners into groups each having a group leader. Each group is given a specific question to research. Supply relevant literature for learners to use for their research.

Each group must hand in a written report that can be reproduced and handed to all learners. On completion the group leader will report on his group's activities. Allow all learners the time to pose questions, give advice, refute evidence etc.

The project method can be advantageous because it:

- Strongly stresses the demand for relevance to reality; and
- develops problem-solving skills.

3.2.4.1.4. Brainstorming

This activity is used when and where transformation is needed as it a process which makes creativity possible. This is an intensive discussion situation in which quantity of ideas and solutions to problems is more important than the quality. The more ideas there are the more there are to choose from, resulting in the best solution to the problem. Allow learners to produce ideas and do not stop until all ideas are completely exhausted.

For brainstorming to be successful the following points must be considered:

- All points made must be recorded;
- No group member may criticise an idea or suggested solution;
- At close of agreed period the group can analyse thepoints raised; and
- Consensus to be reached by group.

The advantage of this approach is its use as an aid to creative thinking in decision making or problem solving situations.

3.2.4.1.5 Roleplay and simulation

For role playing and simulation to be successful for the learners it must be used naturally and the learners must feel that what they are doing fits logically into a planned learning sequence. It allows people to learn, through reflection, from their experiences.

After role play use a debriefing activity. It becomes the most important part of the session, a time when learners make the transition from the role or situation depicted to their own reality. Debriefing elevates a method to a learning experience. Debriefing should flow through four main phases:

- Describing reactions – this is the time when feelings surface. If people played roles, have them explain how they felt about what took place. Do not allow discussions or analysis at this time;
- Review events – reviewing what took place and gathering data can allow new insights to emerge. If there were observers allow them time to comment;
- Analyse – look for meaning, key themes, generalise and generate implications. What has been learned? How does it differ from the real situation?
- Action planning – now is the time to identify what we want to change, how it can be accomplished and how to begin.

Role play is advantageous as it encourages active participation between people of any ability and thus breaks down social barriers in the learning situation. However some learners may feel reluctant to participate and it is advisable to allow these learners to respond in whichever way they wish so that they do not feel over-embarrassed.

3.2.4.1.6. Presentation by learners

Adult learners bring a variety of prior educational and life-experiences into the educational situation. Learners prepare and present case studies based on these experiences. The group is then given the opportunity to discuss the issues.

This method has the following advantages:

- It recognises the adult learners rich experience base;
- It addresses real life problems; and
- learners learn from each others experiences.

3.2.4.1.7. Field trips

Field trips must be arranged to relevant sites. To be effective field trips need to be well planned. The following should be considered when preparing for the field trip:

- visit the site before the trip, and discuss with the guide what you want the learners to see and do;
- pay particular attention to all details such as transportation and meals;
- discuss with learners what they should look for on the trip;
- pay particular attention to learners with disabilities;
- Always have a debriefing session or group discussion at the end of the visit to ensure that the field trip is a learning experience that is reflected upon and shared.

Advantages of the field trip is that it allows the learner to experience a situation personally, but can also provide a common learning experience for the group and may become a resource for further learning activities. It also helps to integrate a group.

3.2.4.1.8. Case studies

The following four phases can be identified when doing case studies:

- The scene is set, objectives are set and procedural problems are clarified.
- Private study - learners are given time to read, digest, and note relevant issues;
- Groups of learners share views, knowledge and skills. Information is judged, solutions developed and alternatives are chosen.
- The plenary session – each small group presents its best solution and the facilitator draws out the underlying principles and problems.

The advantages of case studies are that they are based on actual practice. They also provide opportunities for developing understanding of issues involved and for complex problem-solving.

3.2.4.1.9. Laboratory work

The goals of laboratory work are teaching relevant manual and observational skills

To be effective laboratory work must be seen as relevant and meaningful to the learners and there must be constructive feedback on their performance.

The advantages of laboratory work are:

- Learners learn effectively through practical tasks.
- Learners teach themselves and each other.
- Learners learn through their own efforts.
- Learners develop problem solving skills.

3.2.4.1.10. Map making

This method is used to gather information about communities. Maps can be used to identify the following types of information:

- Location of resources;
- Physical features;
- Identification of existing communal and private water and sanitation facilities;
- Heath hazards;
- Resources that promote health; and
- Community social structures.

Advantages of map making are:

- Communities are enabled to envision a new reality;
- It is a low-cost, high return project;
- It encourages creativity; and
- It encourages group decision making.

3.2.4.1.11. PHAST (Participatory Hygiene and Sanitation Transformation)

PHAST was initiated to develop a participatory approach to hygiene behaviour change and sanitation improvement. This method is used at community level to demonstrate a basic understanding of the health implications of poor water supply and sanitation, a sense of common purpose and a way of planning change in their communities.

The sanitation ladder is a visually stimulating tool that can be used at community level to allow the community to make an informed choice about different sanitation options.

The advantage of the PHAST approach is the achieving of a gradual transformation of how decisions are made at project and programme level, with communities developing their own monitoring and evaluation systems built upon goals and indicators they themselves have identified.

3.2.4.1.12. SARAR

The SARAR method is designed to stimulate the learners to think through problems for themselves and to help them develop their own analytic, creative and planning abilities.

SARAR participatory methodology encourages the learners to share their experiences, ideas, feelings, hopes, fears, beliefs and needs so that the facilitator can come to understand them better and can help them through their own creative problems solving.

Requirements for activities the learners can be involved in:

- pictures;
- visual materials;
- common objects from the environment eg. pebbles; and
- no materials at all eg. song, drama and mime.

Learning activities can:

- require the use of analytical skills;
- emphasise creativity; or
- combine analytical and creativity in a planning exercise.

The advantage of this method is that in every case the learner is involved in thinking, sharing and doing.

As mentioned previously there are many participatory methods of training that can be adapted to the learning situation. However no learning experience is complete without an assessment and feedback to the learners.

3.2.5. Assessment and Evaluation

Assessment, is the last but not least guiding principle of the curriculum framework. There is often a great deal of confusion regarding the terms *assessment* and *evaluation*. The Green Paper on FET gives the following definitions for the terms.

Assessment is defined as:

The process of collecting and interpreting evidence of learner achievement.

Evaluation is defined as:

The process whereby the information obtained through assessment is

interpreted to make judgements about a learner's competence.

All training should be evaluated and the purpose of evaluating the training is to:

- identify if the training programme achieved its objectives
- evaluate the appropriateness of content and processes
- evaluate the effectiveness of facilitators
- provide a form of quality control
- ensure the programme is reaching the correct target group
- identify whether participants are satisfied with the process
- identify strengths and weaknesses in the programme and the reason for this
- assess whether learners are using their new techniques and processes back in the work environment
- assess whether the programme changes attitudes, behaviours, or skills in a way that has a positive impact back in the workplace
- decide if participants are behaving more effectively on the job and if that behaviour is a result of training
- identify learning that is not applicable to the work situation and should be eliminated
- identify all modifications that need to be made to future programmes
- determine the impact the training had on the organisation
- assess whether or not the programme was cost effective
- decide who should participate in training programmes.

There are various models of evaluation models available. From these models evaluation can be divided into four levels namely:

- Level 1 – assesses reaction
- Level 2 – assesses the learning that has taken place
- Level 3 – assesses the behaviour changes at the job after training
- Level 4 – assesses the effect of the training on the organisation

To assess whether learning has taken place, that is what learners have learned in terms of knowledge, attitudes and skills, learning should be assessed.

3.2.5.1. Methods for evaluating learning of knowledge

3.2.5.1.1. Use of portfolios or diaries

Adult learners should grow in competence as they learn. The performative aspect of understanding knowledge is important. Assessment related to practical life experiences must be continuous throughout the learning programme. Learners can be assessed in terms of identified learning outcomes of learning tasks which can be reflected in portfolios, diaries etc and presented as the cumulative result of competence and human potential.

Assessment of evidence in portfolio will ascertain the extent to which the learner met the required learning outcomes. Grading is recommended in place of giving marks.

3.2.5.1.2. Projects, Presentations and performances

Learners can demonstrate their mastery of material via a tangible display of what has been learned. This form of assessment can be the most accurate as these demonstrations of learning by learners do not only report on what they know, they also show it.

3.2.5.1.3. Ponder sheets

3.2.5.1.4. Questions

Learners can be evaluated on their responses to questions based on the keys to understanding. Responses to questions designed to check understanding and questions posed by the learner to the trainer can be used to evaluate learners.

3.2.5.1.5. Self evaluation

Learners can do self evaluation by comparing their ideas against checklists or suggested answers.

3.2.5.1.6. Objective testing

Pre-set questionnaires are used to assess knowledge and understanding during the programme.

Different methods such as multiple choice, true/false, yes/no, matching items, sequencing, completion exercises and factual recall can be used.

Open book methods can be used to reduce the anxiety of the learners. It also approximates reality and the learner can learn important information management skills.

3.2.5.1.7. Subjective testing

This type of testing includes assignments, report writing, essays and responses to case studies. Develops the learners ability to organise, analyse, interpret, and express more complex concepts, processes or ideas.

Tests where learners solve problems give the learners the opportunity to apply existing knowledge to new situations.

3.2.5.1.4. Field assessment

This method is used after training to monitor and evaluate expected outcomes of the project in the field. The objective of the field assessment is to make sure that, what the learners have learned in the learning programme is interpreted correctly, thus displaying the learners competence.

Monitoring tools, in the form of indicators, are developed to measure the effectiveness of learning and teaching and on-the-job performances. Both behavioural and skill changes must be evaluated.

3.2.5.2. Need for Feedback

Feedback is knowledge of what your actions have achieved. Feedback must be given on all assessment done as this will improve the performance of the learners. To ensure that learners benefit from assessment, feedback must be immediate.

As the facilitator is really interested in an outcome that reflects the learner's potential learner response and feedback also allows for a continuous outcomes based assessment.

3.3 EVALUATION CRITERIA APPLICABLE TO PROGRAMMES OFFERED BY NATIONAL COMMUNITY WATER AND SANITATION TRAINING INSTITUTE.

To assure that learning takes place in a training programme the NCWSTI has developed criteria to evaluate the learning materials, the training methods and the trainers.

3.3.1 Criteria for the evaluation of training

- A learning-centred approach is used
- Learning objectives are clear
- Appropriate methods are used in accordance with what needs to be learnt: For example: Processes using visualising; association; rhymes; repetition; mnemonics; acronyms etc. are used to memorise facts. Processes involving questioning; evaluating; reasoning; conceptualising; analysing; comparing; contrasting etc. are used to understand concepts.
- Processes involving simulation; observation; experiencing and experimenting are used to learn physical skills. Lastly, interactional / interpersonal skills are learned through processes that involve understanding, experiencing and practising these skills.
- The learning process is made overt to learners

- Outcomes aim to develop competencies and are expressed as behaviours and skills that are observable, measurable and realistic
- Processes are used that take into account the different learning and thinking styles of learners (visual, auditory, kinaesthetic)
- Participants have time to practice and apply skills, think about future application, raise issues and ask questions
- Theory and practice are linked
- Problem-solving and divergent thinking are encouraged
- Learning blockages are reduced / removed
- Previous experience of learners is recognised
- Processes are used that ensure active participation of learners
- The method puts the group at ease
- Flexibility is applied to meet the needs of learners
- Feedback is elicited from learners throughout

3.3.2 Criteria for Evaluating Trainers

The performance of trainers can be evaluated against the following:

Content:

- Demonstrates understanding of the content
- Refers to content that is relevant to the needs of participants
- Uses appropriate examples to illustrate content where needed
- Elaborates on content appropriately where needed
- Adheres to the content that has been agreed

Process:

- Uses the most appropriate processes to achieve learnings (see Criteria for evaluating methods)
- Demonstrates understanding of process
- Uses processes that are structured so as to ensure participation
- Uses processes that give learners an opportunity to practice and apply learning
- Uses processes that take into account the different learning styles of learners (visual, auditory, kinaesthetic)
- Applies the principles of flexibility effectively
- Can identify blockages to learners created by him/herself or the participants and be able to address this
- Identifies whether or not learning is taking place and takes alternative steps if appropriate

Use of Aids:

(Speaker support systems such as Overheads, flipchart, handouts, videos, card games etc.)

- Uses aids effectively to take into account what needs to be learnt as well as individual learning styles of participants
- Integrates aids with the content and the process
- Understands the appropriate use of aids (e.g. ability to draw out salient points from handouts)

Interaction with learners:

- Puts group at ease
- Is able to effectively manage and lead the group
- Takes into account the existing knowledge and previous experience of learners
- Assists learners to make links between theoretical understanding and practical application
- Handles own nerves
- Handles learners *ad hoc* questions effectively
- Asks reflective questions to deepen learners' insights
- Handles difficult situations effectively
- Demonstrates sensitivity to the dynamics of the group
- Respects the contexts and languages of the learners
- Is able to give and receive feedback

Preparation

- Presentation reflects adequate preparation in terms of understanding both process and content (e.g. has thought of examples and anecdotes, has planned and practised when and how to integrate aids, has identified potential problem areas and has thought through contingencies)

3.3.3 Criteria for Evaluating Learning materials

The following is a set of suggested criteria against which to assess the quality and relevance of learning material:

- Learning material must serve a purpose. Don't include things for the sake of it, only include material that is in direct response to the learning needs of the job (as assessed through a learning needs analysis)
- Handouts must relate directly to the content you are dealing with
- The design is logical and cumulative, from a learning point of view (that is, learning takes place through building blocks - sections, knowledge and skills build on from each other)
- Handouts that need to be read immediately must be concise and relevant. Longer handouts should be given for pre-reading or homework reading.
- If the handout is long and detailed, give participants a question to bear in

mind or what to look out for while reading the handout.

- Always explain what the handout is and what participants should do with it: e.g. read and compare with own answers; read and ask questions or make comments.
- Learners are involved as active participants in their own learning, that is concepts can be worked out by the individuals themselves through the exercise (as opposed to a "chalk-and-talk" methodology, using the manual as a textbook)
- The materials should have processes to enable learners to draw from and share their own experiences and work out and apply concepts for themselves
- Generally, handouts should top-up learning that has taken place through exercises. Using files, as opposed to bound manuals, facilitates this.
- Language level is appropriate
- Visuals and images are appropriate for the learners
- Gender stereotyping is avoided

3.4 COURSE ACCREDITATION AND TRANSPORTABILITY OF SKILLS

Of the 12 organising fields of the National Qualification Framework (NQF) the Manufacturing, Engineering and Technology field appears to be the closest field to the supply of water and sanitation.

The National Standards Bodies (NSB) which are a sub-structure of South African Qualifications Authority (SAQA), and composed of national stakeholders, have been established for each field. The NSBs will be responsible for the establishment of the Standard Generating Bodies (SGB) who in turn will be responsible for the generating of Unit Standards and qualifications in accordance with SAQA requirements. All training programmes and training providers should be registered with the relevant SETA to obtain accreditation.

Generation of Unit Standards is a consultative process involving the entire water sector. All training programmes should have a linkage with the relevant unit standards. The linkage will result in the accreditation of the training programme. This will enable the learner to obtain credits toward a qualification.

Within this context this progamme has been developed to allow for a career path in NQF Level 5. Eighteen unit standards have been developed for the programme. Please refer the document "*Proposed Unit Standards for the Programme*" for more information regarding the process and the unit standards developed.

Future steps such as the establishment of an SGB will take this process further. This

programme is only a small element of a much larger picture therefore the unit standards for the entire water sector need to be developed before the programme can be accredited with SAQA.

3.5 CONCLUSION

In this chapter an attempt was made to focus the attention on the needs for training and capacity building of the councillors and officials of the Local Government. In order to build this capacity the necessity for a learning programme specifically aimed at the needs of the councillors and officials, tasked with the supply of water and sanitation, was identified.

The NCWSTI proceeded with the development of a learning programme, taking into consideration the guiding principles of the curriculum framework. This process led to the development of the learning material of the learning programme. To allow for flexibility the programme was divided into thirty three modules which will be presented in the following chapter.

CHAPTER 4
MATERIAL FOR:
MANAGEMENT OF COMMUNITY WATER AND SANITATION
A LOCAL GOVERNMENT TRAINING PROGRAMME

The preceding chapter dealt with the development of the learning programme for *MANAGEMENT OF COMMUNITY WATER AND SANITATION: A Local Government Training Programme*. This chapter deals with the development of the learning material for the learning programme.

4.1. INTRODUCTION

To allow for greater flexibility a modular learning programme has been developed. For even greater flexibility in choice of relevant learning material after the gap analysis has been done, each module has been sub-divided into several units. The following diagram gives a schematic presentation of the learning material structure.

Schematic Representation of Learning Material Structure

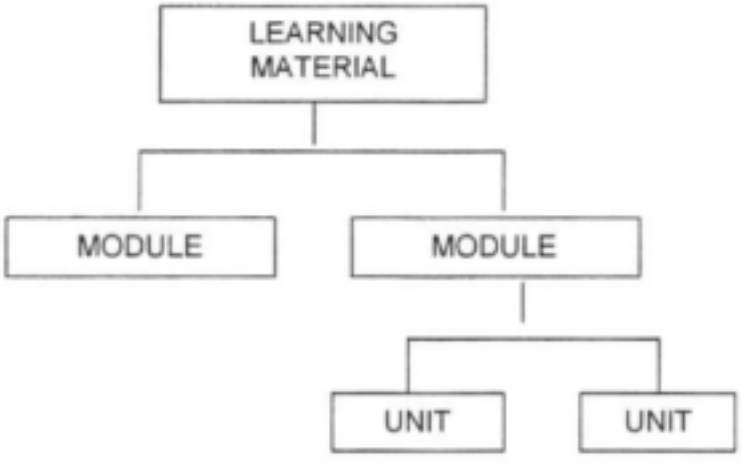


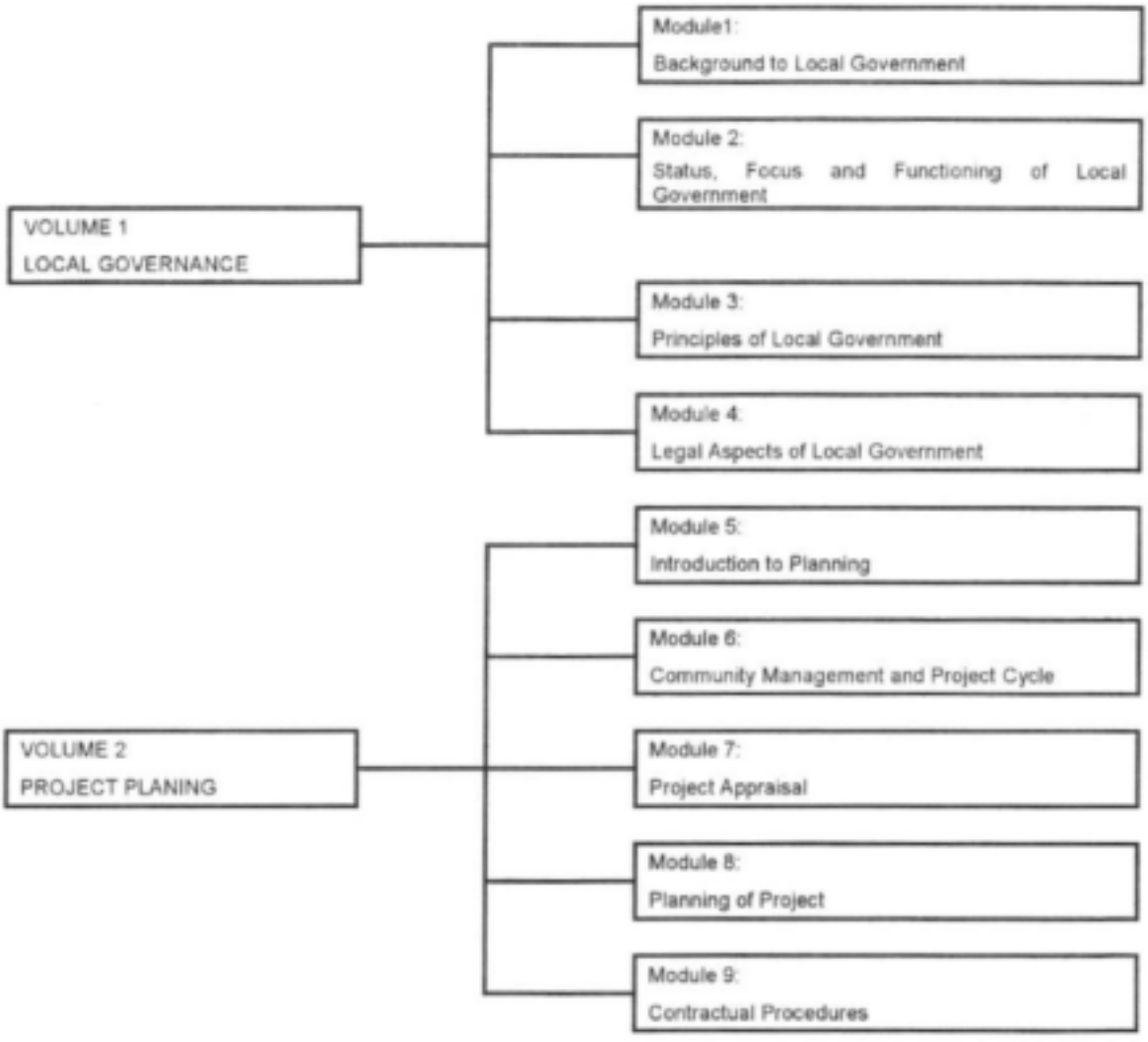
Figure 4.1. Learning Material Structure

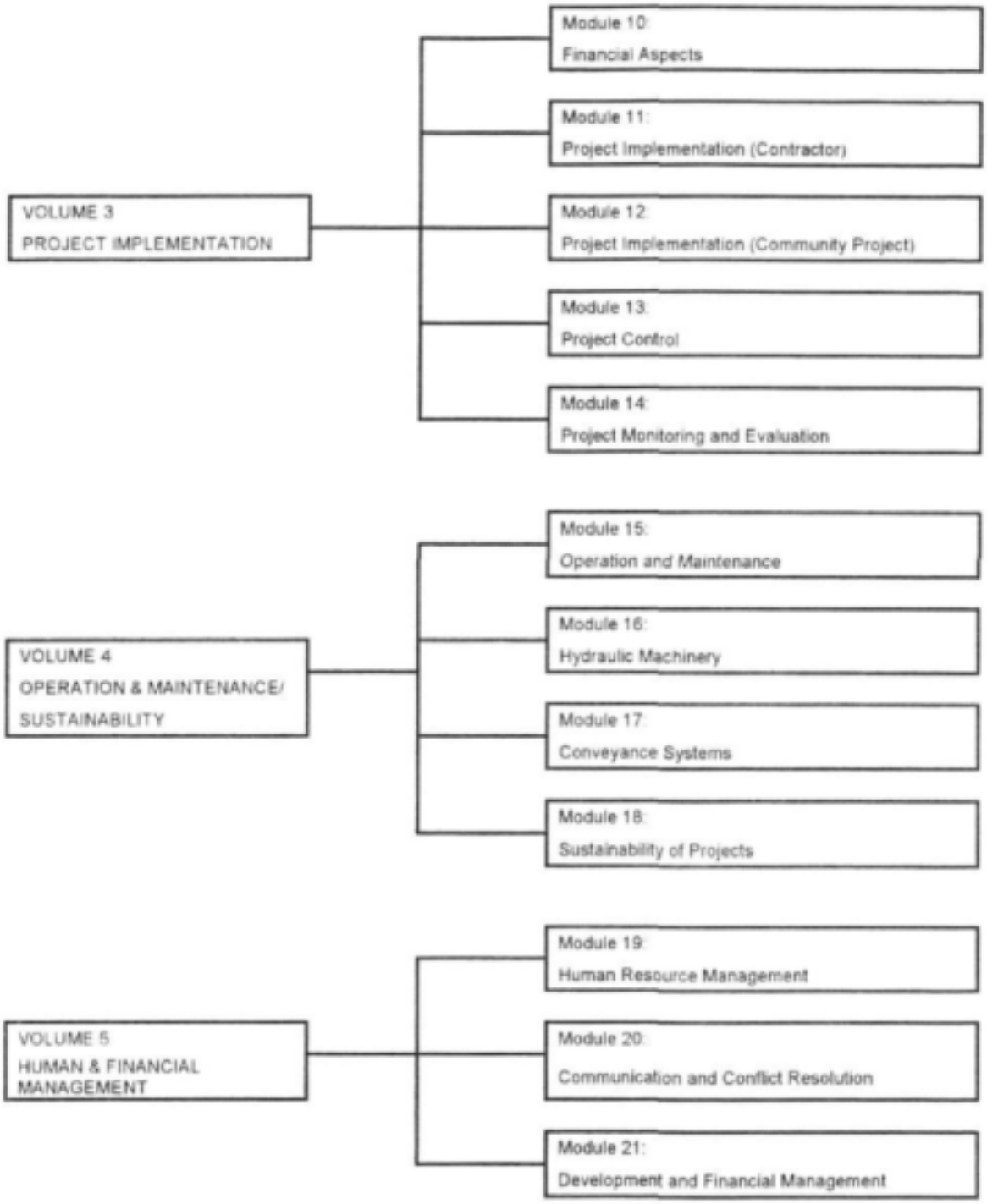
The first draft of the learning material was developed in 1997 and tested in the class room situation. Comments and inputs were gathered from the learners and other roleplayers. These comments and inputs were incorporated into the second draft of the learning material. After receiving and incorporating further comments the learning material has been produced. However as learning is a dynamic process the modules

will constantly be revised to keep abreast of new developments in the water sector.

For any learning programme to be successful the learning material must be relevant. For the learning material to be relevant it should be designed to meet the needs of the learning programme. In the following sub-chapters the learning material design, the detailed modular structure and the management of the learning material will be discussed.

4.2. LEARNING MATERIAL DESIGN




VOLUME 3
PROJECT IMPLEMENTATION
Module 10:
Financial Aspects
Module 11:
Project Implementation (Contractor)
Module 12:
Project Implementation (Community Project)
Module 13:
Project Control
Module 14:
Project Monitoring and Evaluation
VOLUME 4
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SUSTAINABILITY
Module 15:
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Module 17:
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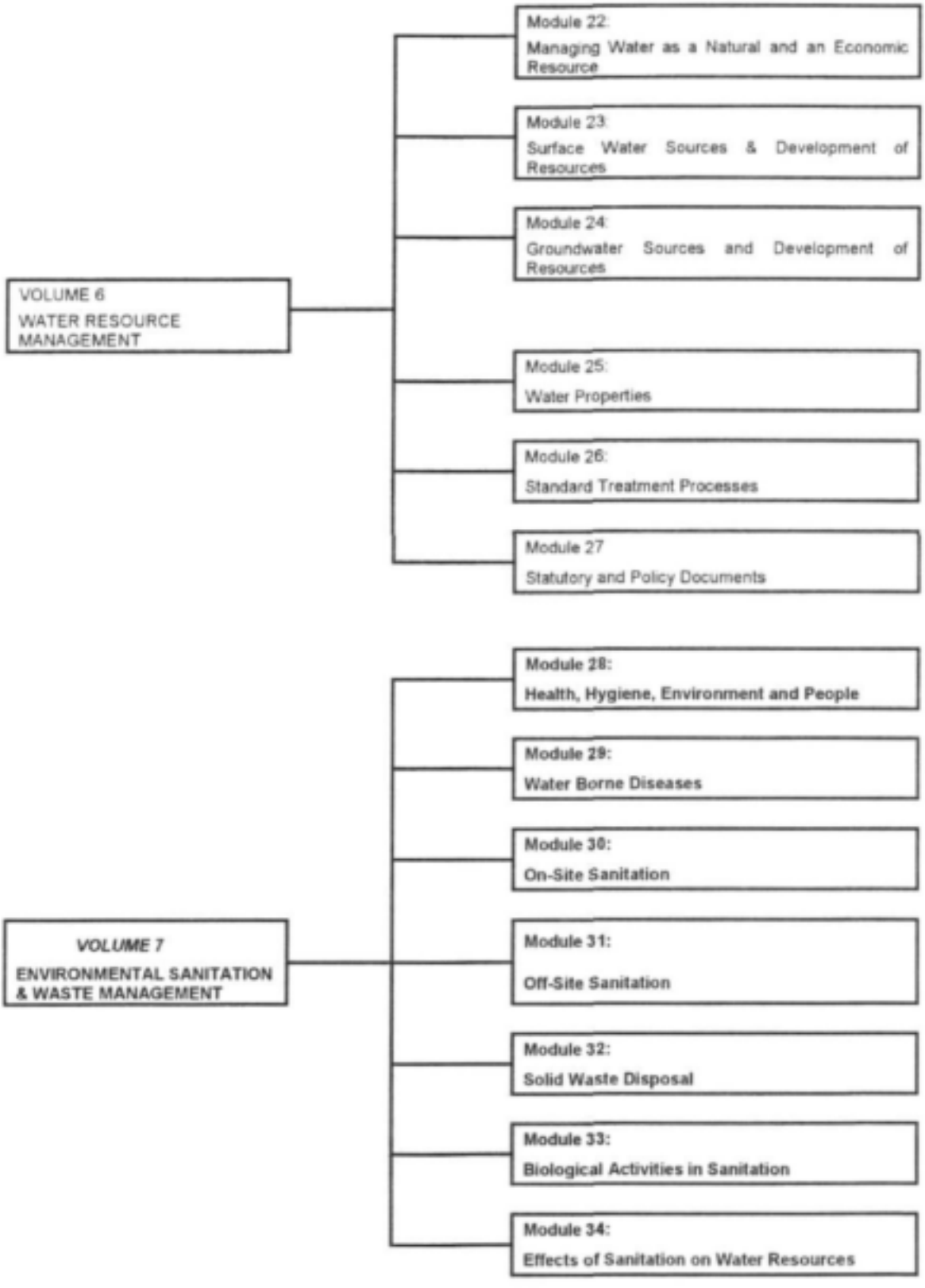
HUMAN & FINANCIAL
MANAGEMENT
Module 19:
Human Resource Management
Module 20:
Communication and Conflict Resolution
Module 21:
Development and Financial Management


VOLUME 6
WATER RESOURCE MANAGEMENT
Module 22:
Managing Water as a Natural and an Economic Resource
Module 23:
Surface Water Sources & Development of Resources
Module 24:
Groundwater Sources and Development of Resources
Module 25:
Water Properties
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VOLUME 7
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Module 28:
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On-Site Sanitation
Module 31:
Off-Site Sanitation
Module 32:
Solid Waste Disposal
Module 33:
Biological Activities in Sanitation
Module 34:
Effects of Sanitation on Water Resources

4.3. DETAILED MODULAR STRUCTURE OF LEARNING MATERIAL

The learning material has been developed using a modular approach. The learning material is structured to give both theoretical and practical hands on training using a participatory methodology.

The material has been divided into following thirty-three modules.

Module 1: Background to Local Government

UNIT 1: EVOLUTION OF LOCAL GOVERNMENT
1.1 The South African Experience
1.2. The transitional process
1.3. What is local government
1.4. What is a Municipality

UNIT 2: THE ROLES OF THE DIFFERENT SPHERES OF GOVERNMENT
2.1. Spheres of government
2.2. The jurisdiction of national government
2.3 The jurisdiction of Provincial Government
2.4. The jurisdiction of local government

UNIT 3: THE LOCAL GOVERNMENT STRUCTURES
3.1. Different categories of municipality
3.2. Co-ordination at district level
3.3. Typical Municipality Structure

UNIT 4: THE NEED FOR COMMUNITY INVOLVEMENT IN LOCAL GOVERNMENT
4.1 Understanding Participation
4.2. Goals of participation
4.3 Why Should Communities be Involved?
4.4. The Core Principles of Community Involvement
4.5 Do's and Dont's of Community Involvement

UNIT 5: THE MECHANISMS TO OBTAIN COMMUNITY PARTICIPATION
5.1 Types of Community Participation
5.2 Mechanisms to ensure community participation

UNIT 6: UNDERSTAND THE PUBLIC PARTICIPATION PROCESS
6.1 Lessons from the past
6.2. The Public Participation Process

Module 2: Status, Focus and Functioning of Local Government

UNIT 1:EXPLAIN THE CONSTITUTIONAL REQUIREMENTS FOR LOCAL GOVERNMENT
1.1. Chapter 7 of the Constitution
1.2 Requirements based on the constitution

UNIT 2:EXPLAIN THE OBJECTS AND FUNCTIONS OF LOCAL GOVERNMENT
2.1. The objects of local government are
2.2. Powers and functions of municipalities
2.2 Procedures and Provisions for Local Government

UNIT 3:DESCRIBE THE CORE FOCUS AREAS OF LOCAL GOVERNMENT
3.1. The Core Focus of Local Government
3.2. Management Focus
3.3. Administration and Finance Focus

UNIT 4:THE LIMITATIONS OF THE AUTHORITY OF LOCAL GOVERNMENT
4.1. National and provincial requirements
4.2. Financial control
4.3. Land tenure
4.4. Legislation

Module 3: Principles of Local Government:

UNIT 1: DESCRIBE THE CORE PRINCIPLES OF COUNCILLORS
1.1. Public responsibility
1.2 Transparency
1.3 Accountability
1.4 Inclusivity
1.5 Local Participation
1.6 General responsibilities
1.7 Sustainable delivery processes
1.8 Relationship with officials

UNIT 2:SOME OF THE CORE ISSUES FACING LOCAL GOVERNMENT
2.1. Urban/Rural Bias
2.2. Service delivery problems
2.3. Unauthorised connections
2.4 Lack of appropriate information
2.5. Lack of capacity at community level
2.6. Non-payment for services
2.7. Centralised decision-making
2.8. Focus on large prestigious projects
2.9. Policy Matters
2.10. Expectations

UNIT 3:COMMITTEE PROCEDURES
3.1 What is a meeting?
3.2. Types of meetings
3.3. Preparation for meetings
3.4. Composition of a committee
3.5. Public Feedback
3.6. Decision-Making
3.7. How to conduct yourself in a meeting
3.8. Meeting Procedures
3.9. Committee Constitutions

UNIT 4:CODE OF CONDUCT

Module 4: Legal Aspects of Local Government

LEGAL DOCUMENTS, ACTS AND POLICIES.

This module refers to all legal documents, acts and policies relevant to the learning material. However documentation is not included for this module. A list of relevant documentation is available on request.

Module 5: Introduction to planning

UNIT 1:HISTORICAL OVERVIEW
1.1 Background
1.2 Failures of the Past
1.3 What can we Learn From This?

UNIT 2: INVOLVING LOCAL PEOPLE - COMMUNITY PARTICIPATION
2.1 Types of Community Participation
2.2 Core Issues of Community Participation

UNIT 3: MANAGEMENT
3.1. Planning
3.2 Implementing
3.3 Evaluation
3.4 Control
3.5 Development Management
3.6 Integrating Community and Technical Inputs

UNIT 4:HOW TO PLAN
4.1 Core Aspects of Planning
4.2 Steps in the Planning Process

UNIT 5: MACRO- AND MICRO-LEVEL PLANNING
5.1 Macro-Level Planning
5.2 Micro-Level Planning

UNIT 6: WATER SERVICES DEVELOPMENT PLANS

UNIT 7: PLANNING ASPECTS OF ON-SITE SANITATION
7.1. Institutional responsibilities
7.2 Institution-householder linkage
7.3 Human resources development

Module 6: Community Management and Project Cycle

UNIT 1:COMMUNITY BASED MANAGEMENT PROCESSES
1.1 The need for community participation in management
1.2. Participatory Appraisal and Training
1.3. Participatory Development Management

UNIT 2:RANKING PROBLEMS AND OPPORTUNITIES
2.1. Review process
2.2 Ranking process
2.3 Development of action steps

UNIT 3:THE PROJECT CYCLE
3.1 The integrated project cycle
3.2. Requirement for the Project Cycle

Module 7: Project appraisal and Selection

UNIT 1:PROJECT APPRAISAL
1.1. Introduction
1.2. Learning Objective
1.3. Project Appraisal

UNIT 2:IMPACT ANALYSIS
2.1 Impact Analysis: The Poor and Women
2.2. Environmental Impact Assessment
2.3 Feasibility and Sustainability
2.4 Controllability

UNIT 3:CASH FLOW ANALYSIS

UNIT 4:LIQUIDITY AND SUSTAINABILITY

UNIT 5:TIME VALUE OF MONEY
5.1 Compounding
5.2 Discounting (present worth)

UNIT 6:PROJECT SELECTION - DECISION CRITERIA
6.1 Pay-Back Method
6.2 Return on Investment
6.3 Net Present Value
6.4 Benefit-Cost Ratio
6.5 Internal Rate of Return (IRR)

UNIT 7:SENSITIVITY ANALYSIS

Module 8: Planning of Project

UNIT 1: PREPARING A PROPOSAL
1.1 Whose Proposal?
1.2 The Written Proposal

UNIT 2:APPOINTMENT OF CONSULTANTS

UNIT 3:FEASIBILITY STUDY

UNIT 4:THE BUSINESS PLAN
4.1 The importance of a successful Business Plan (Generic Version)
4.2 Contents of a typical Business Plan (water sector specific)
4.3 Constituents of a Business Plan

UNIT 5:DETAIL DESIGN

UNIT 6:THE DEMAND FOR SANITATION

UNIT 7:PROJECT DEFINITION
7.1 Scope
7.2 Priority areas

UNIT 8:BACKGROUND INFORMATION
8.1 The responsible agency
8.2 Staff
8.3 Community participation
8.4 Survey of the area

UNIT 9: COMPARISON AND SELECTION OF SYSTEMS
9.1. How to set up a Latrine Provision Programme in your Community
9.2. Working out a Budget

Module 9: Contractual Procedures

UNIT 1:CONTRACT DOCUMENTATION
1.1 Tender Document
1.2 General Conditions of Contract
1.3 Special conditions of contract and contract specifications
1.4 Project specifications

UNIT 2:TENDER PROCEDURE
2.1 Tender notice
2.2 Tender Period
2.3 Tender Adjudication

UNIT 3: AWARDING OF CONTRACT
3.1 Contract Award
3.2 Contract Sureties, Guarantees, Pro Forma Agreements
3.3 Contract Commencement Time Table

UNIT 4: ACTIVITIES/DUTIES OF PROJECT PARTICIPANTS DURING THE TENDER STAGE

Module 10: Financial Aspects

UNIT 1:SCOPE STATEMENT
1.1 Project Justification
1.2 Project Deliverables
1.3 Project Objectives

UNIT 2:WORK BREAKDOWN STRUCTURE
2.1 Components of the Work Breakdown Structure

UNIT 3:ESTIMATING TIME/ACTIVITY DURATION

UNIT 4:GANTT CHART/BARCHART

UNIT 5: NETWORK DIAGRAM
5.1 Definition of an Activity
5.2 Logical Relationships
5.3 How to Draw the Logical Relationships
5.4 Activity Logic Table
5.5 Critical Path Method Steps
5.6 Forward Pass
5.7 Backward Pass
5.8 Activity Float
5.9 Leads and lags
5.10 Critical Path

UNIT 6:COSTING
6.1 Resource Planning
6.2 Outputs from Resource Planning
6.3 Cost Budgeting
6.4 Uncertainties in Estimating
6.5 Sensitivity Analysis
6.6 Different Types of Costs

UNIT 7:HOW TO DRAW AN S-CURVE

UNIT 8: ECONOMIC FACTORS
8.1. Choosing between alternatives
8.2 Least-cost analysis of alternatives
8.3 Economic costs of sanitation systems
8.4 Total annual cost per household
8.5 Cost-benefit analysis

UNIT 9:FINANCIAL FACTORS
9.1 Financial costs of sanitation systems
9.2 Affordability and financial assistance policy
9.3 Financial assistance

Module 11: Project Implementation (Contractor)

UNIT 1: CONTRACTED PARTIES AND OTHER PROJECT PARTICIPANTS
1.1. A graphical representation of the relationship between the main role players in the implementation of a project with regards to the financial issues
1.2 Contracted parties and other project participants
1.3 Commencement of work

UNIT 2: PROJECT PROGRAMME AND PERFORMANCE MONITORING
2.1 Construction Planning
2.2 Construction Programming

UNIT 3:VARIATIONS TO SCOPE OF PROJECT AND ANTICIPATED CONDITIONS
3.1 Scope
3.2 Variation Orders
3.3 Conditions

UNIT 4:REVISED COST ESTIMATES
UNIT 5:QUALITY CONTROL
5.1 Quality control by Contractor
5.2 Quality Control by the Engineer
5.3 Authorised measurements and tolerances
5.4 Care of the Works

UNIT 6: MEASUREMENT AND PAYMENT
6.1 Quantification of work done
6.2 Compensation for Contractor's General Obligations
6.3 Materials on site
6.4 Payment Certificates
6.5 Contract Price Adjustment
6.6 Penalties and Bonuses

UNIT 7: CERTIFICATES OF COMPLETION AND DEFECTS LIABILITY

UNIT 8: CLAIMS

UNIT 9: DISPUTE RESOLUTION

UNIT 10: CANCELLATION OF CONTRACT

UNIT 11: PROJECT COMPLETION INFORMATION

Module 12: Project implementation (community project)

UNIT 1:ISSUES TO BE CONSIDERED
1.1 Implementing With Strong Community Involvement
1.2 Implementation Checklist
1.3 Implementation Steps
1.4 Human Factors

UNIT 2:RESOURCE MANAGEMENT
2.1 Resource Histogram
2.2 Resource Loading

2.3 Resource Smoothing

UNIT 3:RETENTION

UNIT 4:PROJECT PROCUREMENT MANAGEMENT
4.1 Procurement Planning
4.2 Solicitation Planning
4.3 Solicitation
4.4 Source Selection
4.5 Contract Administration
4.6 Contract Close-out

Module 13: Project control

UNIT 1:PROJECT CONTROL
1.1. Benefits of Project Control
1.2 Control Cycle
1.3 The Project Expediter
1.4 Controlling the Project Participants
1.5 Human Factors

Module 14: Project Monitoring and Evaluation

UNIT 1: DEFINITION OF MONITORING AND EVALUATION
1.1 Definition on Monitoring
1.2 Definition of Evaluation

UNIT 2:PROCEDURE FOR EVALUATION – CONVENTIONAL METHOD
2.1 Decisions to Evaluate
2.2 Selection of Person Responsible for the Evaluation
2.3 Establish Terms of Reference for the Evaluation
2.4 Desk study
2.5 Field visit to plan the evaluation
2.6 Decide on focus of the evaluation
2.7 Collection of Data
2.8 Assessment of Data
2.9 Preparation of Recommendations
2.10 Review of the Report
2.11 Follow-Up Action

UNIT 3: PARTICIPATORY EVALUATION
3.1 Characteristics of Participatory Evaluation
3.2 Conducting of Participatory Evaluation

UNIT 4: INDICATORS AND MEASUREMENT
4.2 Indicators of Progress in Water and Sanitation Programs
4.2 Examples of How To Evaluate Water and Sanitation Projects
4.3 Evaluation of Utilisation
4.4 Evaluation of Impact

Module 15: Operation and Maintenance

UNIT 1: OBLIGATIONS OF ROLEPLAYERS
1.1 Obligations Of The Service Provider
1.2. Obligations of Service Beneficiaries

UNIT 2: OPERATION AND MAINTENANCE IN THE CONTEXT OF SUSTAINABILITY

UNIT 3: THE TECHNOLOGY SELECTION PROCESS
3.1 Resource-driven Approach.
3.2 Demand-driven Approach.
3.3 Factors influencing water supply technology choice

UNIT 4: THE PROCESS OF COMMUNITY WATER SUPPLY TECHNOLOGY CHOICE

UNIT 5: FACTORS INFLUENCING SANITATION TECHNOLOGY CHOICE AND THE EFFECT ON OPERATION AND MAINTENANCE
5.1 the process of low-cost sanitation technology choice

UNIT 6.OPERATION AND MAINTENANCE SYSTEMS
6.1 Equipment Maintenance Module
6.2 Water Quality Module
6.3 Performance and Loss Management Module
6.4 Cost Module
6.5 Revenue Module
6.6 Budget and Financial Module
6.7 Administrative Module

UNIT 7: SAFETY

Module 16: Hydraulic Machinery

UNIT 1: PUMPS
1.1 Classification Of Pumps
1.2 Principles
1.3 Advantages And Disadvantages
1.4 Uses
1.5 Maintenance

UNIT 2: VALVES
2.1 Check Valves/Non Return Valves
2.2 Ball Valves
2.3 Gate Valves
2.4 Butterfly Valve
2.5 Air Relief Valve
2.6 Pressure Control Valves
2.7 Plug Valves

UNIT 3: FLOW METERS
3.1 Rate Of Flow And Total Flow
3.2 Types Of Flow Meters
3.3 Maintenance

Module 17: Conveyance Systems and Water Supply Equipment

UNIT 1. PIPES
1.1 Flow in pipes
1.2. Basic Hydraulic Theory
1.3 Optimizing the hydraulic design of a pressure pipeline
1.4 Water hammer
1.5 types, features and uses
1.6 advantages and disadvantages
1.7 pipe laying
1.8 Pipe class

UNIT 2: PIPE FITTINGS
2.1 Pipe Joints
2.2 Types of pipe fittings

UNIT 3: OPEN CHANNEL

UNIT 4: PREPAID METERS
4.1 Technology choice
4.2 Advantages of prepayment water metering system
4.3 *Disadvantages of prepayment water metering system*
4.4 Types of meters

UNIT 5: TAPS

Module 18: Sustainability of projects

UNIT 1: TARIFF POLICY
1.1 Operating and Maintenance Costs
1.2 · Uniform tariffs
1.3 Life-Line (Social) Tariffs
1.4 Sliding tariff scales
1.5 Marginal Tariffs and the re-evaluation of CapitalCosts
1.6. Communal Tariffs
1.7 Improvements in Water Supply and SanitationServices
1.8 Tariffs and Service Choice
1.9 Non-payment for water
1.10 Unauthorised Connections

UNIT 2: SETTING TARIFFS
2.1 Users' Needs and Expectations
2.2 Technical Options
2.3 Analysis of Technical Options
2.4 Check Adequacy of Revenues
2.5 Other income
2.6 Simple guidelines

UNIT 3: TOWARDS COST-RECOVERY
3.1 Public Health Criterion

3.2	Financial Criterion
3.3	Economic Criterion

UNIT 4: CHARACTERISTICS OF A GOOD TARIFF STRUCTURE
4.1 Adequacy
4.2 Fairness
4.3 Simplicity
4.4 Enforceability
4.5 Affordability

UNIT 5: DIFFERENCES BETWEEN COMMUNITY PARTICIPATION AND MANAGEMENT

UNIT 6: PRECONDITIONS FOR COMMUNITY MANAGEMENT

UNIT 7: LEVELS OF BUILDING PROCESS

UNIT 8: BENEFITS OF COMMUNITY MANAGEMENT

UNIT 9: CONSTRAINTS TO EFFECTIVE COMMUNITY MANAGEMENT

UNIT 10: POLICY FRAMEWORK FOR COMMUNITY MANAGEMENT
10.1 Favourable environment
10.2 Ownership
10.3 Community Organisation
10.4 Support Services to Communities
10.5 Technology Choice
10.6 Capacity Building

UNIT 11: ROLE OF COUNCILLORS AS THE SERVICE PROVIDER

UNIT 12: THE MASAKHANE CAMPAIGN

UNIT 13: KEY ELEMENTS OF SUSTAINABILITY
13.1 Enabling environment
13.2 Health Awareness
13.3 Strong Institutions
13.4 Felt Need
13.5 Supportive Attitudes
13.6 Expertise and skills
13.7 Appropriate Service Levels
13.8 Appropriate Technology
13.9 Materials and Equipment
13.10 Support services

UNIT 14: DEMAND AND WILLINGNESS TO PAY
14.1 Factors Influencing Willingness to Pay
14.2 Measuring Willingness to Pay
14.3 Water Vending as Evidence of Willingness to Pay
14.4 Women and Willingness to Pay
14.5 Why Users Should Pay for Water and Sanitation Services

UNIT 15: OPTIONS AND METHODS FOR COST RECOVERY
15.1 Managing cost recovery: fixed monthly payments
15.2 Managing cost recovery: Metered Prepayment Options
15.3 Managing cost recovery: Metered Billing Systems
15.4 Managing Cost recovery: Community Financing Options
15.5 Conclusions and recommendations of the systems

Module 19: Human Resource Management

UNIT 1: THE KNOWLEDGE NEEDED TO MANAGE HUMAN RESOURCES
1.1 Understanding human resources
1.2 Work design and enrichment
1.3 Training and Capacity Building in Organisations
1.4 Job evaluation
1.5 Compensation
1.6 Performance evaluation
1.7 Legal aspects of Human Resource ManagemEnt

UNIT 2: THE MANPOWER RECRUITMENT PROCESS
2.1 Recruitment
2.2 Legal aspects of recruitment
2.3 Affirmative action and equal opportunity
2.4 Employee selection mechanisms and tools

UNIT 3: THE MANPOWER REQUIREMENT OF LOCAL GOVERNMENT
3.1. Categories of Required Manpower
3.2 Motivating Manpower
3.3 Managing Local Government Manpower

UNIT 4: ALTERNATIVES FOR EXTENDING HUMAN RESOURCES
4.1 Why Extend the Human Resource Base?
4.2 Mechanisms of Extending the Human Resource Base

UNIT 5: HOW TO EVALUATE AND USE PRIVATE SECTOR ORGANISATIONS
5.1 Why Utilise Private Sector Organisations
5.2 Types Of Consultants
5.3 Selecting and Evaluating Private Sector Organisations
5.4 Managing the Consultant

Module 20: Communication and Conflict Management

UNIT 1: COMMUNICATION: A FIRST LOOK
1.1 Understanding Communication
1.2. barriers to communication
1.3 How to Overcome Barriers to Communication

UNIT 2: DIFFERENT TYPES OF COMMUNICATION
2.1 Intra-Personal
2.2 Inter-Personal
2.3 Small-Group
2.4 Public
2.5 Organisational
2.6 Mass
2.7 Intercultural Communication

UNIT 3: PUBLIC SPEAKING
3.1 Audience Analysis
3.2 Developing And Organising the Message
3.3 Rehearsing and Delivering a Speech

UNIT 4: SMALL-GROUP COMMUNICATION
4.1 Introduction
4.2 What is a Group?
4.3 Leadership Structures
4.4 Creating a Strong Group
4.5 How to make a Group Cohesive
4.6 Overcoming a Lack of Interest
4.7 Working in Groups

UNIT 5: UNDERSTANDING CONFLICT
5.1 Social Relationships
5.2 Kinds of Conflict
5.3 Causes of Conflict
5.4 Understanding the Conflict Process

UNIT 6: METHODS OF CONFLICT RESOLUTION AND PROBLEM SOLVING
6.1 Conflict Resolution Strategies
6.2 Decision Making Methods
6.3 Personal Styles of Conflict Resolution
6.4 Steps in Resolving Interpersonal Conflict
6.5 Steps in Resolving Conflict in Groups
6.6 The Language of Problem Solving

UNIT 7: INTRODUCTION TO INDUSTRIAL RELATIONS

Module 21: Development and Financial Management Practices

MODULE 21.1 :FINANCIAL PRACTICES

UNIT 1: FUNCTIONS OF FINANCIAL MANAGEMENT
1.1 Planning and Budgeting
1.2 Revenue Estimation, Tariffs, and Collection
1.3 Inventory management/Procurement
1.4 Cash Management
1.5 Debt Managemen
1.6 Accounting
1.7 Auditing and Reporting

UNIT 2: FINANCIAL RATIOS
2.1 Measures of Profitability
2.2 Measures of Short-term Solvency (Liquidity)
2.3 Measures of Long-term Solvency (Debt Ratios)
2.4 Measures of Service and Operation

UNIT 3: COMMON ERRORS IN FINANCIAL MANAGEMENT AND THEIR EFFECTS

MODULE 21.2: SOURCES AND TYPES OF FUNDS AVAILABLE TO LOCAL GOVERNMENT

UNIT 3: POLICY ON LOCAL GOVERNMENT FINANCE
3.1 THE CURRENT SITUATION

3.2 policy objectives
3.3 a framework for a new municipal financial system

UNIT 4: TYPES AND SOURCES OF INCOME
4.1 Borrowing powers and loans
4.2 Municipal stock
4.3 Revenue

MODULE 21.3: BASIC ELEMENTS OF BANKING

UNIT 5: THE TYPES OF ACCOUNTS AVAILABLE TO CUSTOMERS
5.1 Solicitors' accounts
5.2 Receivers' accounts

UNIT 6: TYPES OF CUSTOMERS - CUSTOMER/BANK RELATIONSHIP
6.1 The range of banking customers
6.2 The legal relationships between bankers and their customers

UNIT 7: CUSTOMER SERVICES: MONEY TRANSFER AND FINANCE
7.1 Changing pattern of banking services
7.2 Money transfer
7.3 Credit card services
7.4 Overdrafts and loans
7.5 Sophisticated financial services

UNIT 8: CUSTOMER SERVICES: OTHER SERVICES
8.1 Insurance services
8.2 Stock Exchange transactions
8.3 Investment management
8.4 Pension funds
8.5 Foreign exchange and overseas trade services
8.6 Risk management services
8.7 Advisory services

MODULE 21.4: BASIC PRINCIPLES OF ACCOUNTING

UNIT 9: CONCEPTS
9.1 Spheres of Accounting
9.2 Origin of Accounting Theory
9.3 Generally Accepted Accounting Practice (GAAP)
9.4 Accounting Entity
9.5 Income
9.6 Realisation Principle
9.7 Expenses, Costs and Losses
9.8 Accrual Principle

UNIT 10: WHAT YOU NEED TO KNOW ABOUT FINANCIAL STATEMENTS
10.1 Financial Position
10.2 Income Statement (Statement of Operations)

UNIT 11: TYPES OF COMMONLY USED ACCOUNTS
11.1 Asset Accounts
11.2 Liability Accounts
11.3 Owner's Equity Accounts
11.4 Titles of Accounts

UNIT 12: DOUBLE-ENTRY SYSTEM: THE BASIC METHOD OF ACCOUNTING
12.1 The T Account
12.2 The T Account Illustrated
12.3 Analysis of Transactions
12.4 Transaction Analysis Illustrated
12.5 Recording Transactions

UNIT 13: MANUAL DATA PROCESSING: JOURNALS AND PROCEDURES
13.1 Sales Journal
13.2 Purchases Journal
13.3 Cash Receipts Journal
13.4 Cash Payments Journal
13.5 General Journal

UNIT 14: Financial Records - The Ledger
14.1 Revision of the Balance sheet
14.2 Opening the Ledger
14.3 Posting
14.4 Balancing
14.5 Trial Balance
14.6 Balance Sheet
14.7 Gains and Losses
14.8 Basic Rules for Accounting
14.9 Classification of Ledger Accounts
14.10 Effect of Changes in Financial Position
14.11 Posting Changes to the Ledger
14.12 Trial Balance
14.13 Final Accounts
14.14 Gains and Losses Account
14.15 Balancing the Ledger Accounts
14.16 Balance Sheet

UNIT 15: PETTY CASH PROCEDURES
15.1 Establishing the Petty Cash Fund
15.2. Making Disbursements from the Petty Cash Fund

UNIT 16: REIMBURSING THE PETTY CASH FUND

Module 22.1: Managing Water as a Natural Resource

UNIT 1: EVAPORATION AND TRANSPIRATION
1.1 Evaporation/Evapotranspiration
1.2 Evaporation: the South African situation
1.3 Efficient storage of water
1.4 Reduction of evaporation losses

UNIT 2: CONDENSATION

2.1 Condensation
2.2 Clouds and Cloud formation

UNIT 3: PRECIPITATION
3.1 Types of precipitation
3.2 The South African Rainfall Situation
3.3 Rainfall-producing mechanisms in South Africa
3.4 Extreme Climatic conditions in South Africa

UNIT 4: SURFACE RUN-OFF
4.1 Pathways of water after it falls to earth
4.2 Run-off
4.3 The availability of surface water: the South African situation

UNIT 5: INFILTRATION
5.1 Infiltration and recharge
5.2 Effects of gravity on water
5.3 How soil conditions affect infiltration

UNIT 6 DEMAND FOR WATER
6.1. Current demand

UNIT 7: FUTURE DEMAND

UNIT 8: POSSIBLE SOLUTIONS
8.1 Exploitation of unutilised catchments
8.1.1 Utilisation of the Mzimvubu River Basin
8.1.2 Utilisation of the Zambesi River Basin
8.1.3 Utilisation of the Zaire River Basin

UNIT 9 WATER SAVINGS
9.1 Domestic and Municipal Savings
9.1.1 Domestic Savings
9.1.2 Municipal Savings
9.2 Recycling Effluent
9.3 Improved Irrigation Techniques Conclusion

Module 22.2: Managing Water as an Economic Resource

UNIT 1: CHARACTERISTICS OF WATER

UNIT 2: TRADITIONAL APPROACHES TO WATER MANAGEMENT

UNIT 3: THE WATER PROBLEM
3.1 Causes
3.2 Improving Water Resources Management

UNIT 4: WATER POLLUTION : ENSURING SAFE WATER SUPPLIES TO COMMUNITIES?
4.1 Background
4.2 Issues
4.3 Policy Options

UNIT 5:NON-POINT SOURCE POLLUTION - CAN IT BE CONTROLLED?
5.1 Background
5.2 Pollution Control Methods for Non-PointSources of Pollution
5.3 Policy Options

UNIT 6: WATER SUBSIDIES - ECONOMIC EVIL OR DEVELOPMENT SPRINGBOARD?
6.1 Background
6.2 Issues
6.3 Policy Options

UNIT 7:RURAL WATER INVESTMENT STRATEGIES
7.1 Rural water supply - a productive and consumption investment
7.2 Production and distribution objectives for water policy
7.3 Rural Water Investment Strategies
7.4 A framework for decision making at project level
7.5 Conclusions

UNIT 8:INTRODUCTION TO SOUTH AFRICAN WATER LAW
8.1 Early Developments in the Cape Province
8.2 Water Law in the Union of South Africa
8.3 Water Law in the Republic of South Africa
8.4 National Water Act

Module 23: Surface Water and Development of Surface Water Resources

UNIT 1:Surface Water Resources
1.1 Introduction to the South African situation
1.2 Runoff Process
1.3 Types and distribution of surface water bodiesIn South Africa
1.4 The state of preservation of catchments
1.5 Quantification of Surface Water Sources

UNIT 2:DEVELOPMENT OF SURFACE WATER RESOURCES
2.1 Purpose of dams
2.2 Features of dams
2.3 Requirements for design and construction
2.4 Choice of Location
2.5 Types of dams
2.6 Site and type selection
2.7 Operation and maintenance.
2.8 Periodic inspection and evaluation.
2.9 Safety.

Module 24: Groundwater Sources and Development of Groundwater Resources

UNIT 1: ROCK FORMATION AND GROUNDWATER
1.1 Introduction
1.2 Rocks and Water

UNIT 2: GROUNDWATER ZONES
2.1 The Groundwater Zone

UNIT 3: AQUIFERS
3.1. Aquifers

3.2 Recharge of Groundwater
3.3. Connection between Rivers and Groundwater

UNIT 4: POLLUTION OF GROUNDWATER
4.1 Pollution of Groundwater

UNIT 5: EXPLOITATION OF GROUNDWATER
5.1 The distribution, use and potential for the exploitation of ground water
5.2 Yield
5.3 Potential for the exploitation of ground water
5.4 Reasons for using groundwater

UNIT 6: BOREHOLES
6.1 The South African situation

UNIT 7: SPRINGS AND SPRING PROTECTION
7.1 Different Spring Protection Designs
7.2 Protective measures for contamination of collected spring water
7.3 Conclusion

Module 25: Water Properties and Water Quality

UNIT 1: PROPERTIES OF WATER

UNIT 2: QUALITY OF WATER

UNIT 3: COLLECTING AND PROCESS DATA ON WATER QUALITY
3.1 identification of substances of concern
3.2 points where samples need to be taken
3.3 methods of collecting samples
3.4 processing of data

UNIT 4: STANDARDS FOR WATER QUALITY

UNIT 5: TYPICAL WATER QUALITY PROBLEMS IN SOUTH AFRICA
5.1 SURFACE WATER
5.2 GROUNDWATER
5.3 consumer complaints and possible remedies

UNIT 6: LABORATORY TESTS – PRACTICAL
6.1 pH
6.2 turbidity
6.3 hardness
6.4 residual chlorine
6.5 E Coli

Module 26: Standard Treatment Processes

UNIT 1:CLASSIFICATION OF VARIOUS TREATMENT OPTIONS

UNIT 2:VARIOUS TREATMENT OPTIONS

UNIT 3 : SELECTION OF APPROPRIATE METHOD OF TREATMENT

UNIT 4:HOME AND COMMUNITY TREATMENT OPTIONS
4.1 water from safe sources
4.2 sedimentation
4.3 coagulation with alum
4.4 pouring water through cloth
4.5 chlorination
4.6 boiling
4.7 sand filtration
4.8 storage
4.9 solar heating

UNIT 5:CONVENTIONAL TREATMENT PROCESSES
5.1 Aeration
5.2 taste and odour removal
5.3 flocculation
5.4 sedimentation
5.5 filtration
5.6 disinfection
5.7 Stabilisation

UNIT 6: PACKAGE PLANTS

Module 27: Statutory and policy documents

LEGAL DOCUMENTS, ACTS AND POLICIES.

This module refers to all legal documents, acts and policies relevant to the learning material. However documentation is not included for this module. A list of relevant documentation is available on request.

Module 28: Health, Hygiene, Environment and People

UNIT 1: THE SOUTH AFRICAN SITUATION
1.1 Lack of adequate sanitation in South Africa
1.2 Health impact of inadequate sanitation in South Africa
1.3 The Bigger Picture

UNIT 2: CONCEPTS AND LINKAGES
2.1 What is health?
2.2. What is the environment?
2.3. What is environmental health?
2.4. What is environmental hygiene?
2.5. What is primary environmental care?
2.6. People and the environment
2.7. People Pollute The Environment And The Environment Pollutes People
2.8. Contrasting urban and rural environmental health issues
2.9 WHAT IS SANITATION?

UNIT 3: COMMUNITY HEALTH AND HYGIENE
3.1. Personal Hygiene

3.2. Domestic Hygiene
3.3. Safe Handling Of Food
3.4. Feeding Of Babies And Young Children
3.5. Ensure Safe Water

UNIT 4: SOCIAL AND CULTURAL CONSIDERATIONS IN SANITATION
4.1. Social structure
4.2. Cultural beliefs and practices
4.3. Concepts of hygiene
4.4. Beliefs about sanitation and disease
4.5. Forces for change
4.6. Responses to change
4.7. Conclusion

Module 29: Water Borne Diseases

UNIT 1: POLLUTION PATHS
1.1 Air To Water
1.2 Land To Water
1.3 Water To Water

UNIT 2: SOURCES OF WATER POLLUTION AS A CAUSE OF ENVIRONMENTAL HEALTH PROBLEMS
2.1 Point - Source Pollution
2.2 Non -Point or Diffuse Sources of Pollution
2.3 Interaction between energy, pollution, environment and health

UNIT 3. ROUTES OF DISEASE TRANSMISSION

UNIT 4. THE SPREAD OF SANITATION RELATED DISEASES
4.1 The 5 F's of Sanitation
4.2 Safe places for excreta disposal
4.3 Preventing the spread of water and sanitation related diseases

UNIT 5: TYPES OF DISEASES
5.1 Water-borne through microbiologically contaminated water
5.2 Water-washed sanitation related diseases
5.3 Soil and animal transmitted water and sanitation related diseases
5.4 Water-based through contact
5.5 Water-site related insect vector
5.6 Toxic diseases

Module 30: On- Site Sanitation

UNIT 1: WHY DO WE NEED ON-SITE SANITATION?
1.1. Historical evidence
1.2 The present situation
1.3. Constraints
1.4. Priorities

UNIT 2: TECHNOLOGY CHOICE
2.1. Shallow pit
2.2. Simple pit latrine
2.3. Single or double pit
2.4 Ventilated pit latrine
2.4. Pour-flush systems
2.5. Septic tank
2.6 Conventional water-borne sanitation

2.7. On-site vs off-site

UNIT 3: ARE OUR SANITATION SYSTEMS SAFE?
3.1 Hygienically safe and non-polluting
3.2 Culturally acceptable
3.3 Affordable, sustainable and technically viable

UNIT 4: DESIGN OF LATRINES AND SEPTIC TANKS
4.1 Pit Latrines
4.2 Ventilated Improved Pit Latrines
4.3 Septic tank

UNIT 5.OPERATION AND MAINTENANCE OF ON-SITE SANITATION
5.1 Objectives of an Operation and Maintenance Programme
5.2 Various Role Players in On-Site Sanitation Operation and Maintenance (O&M)
5.3 Expected Benefits of Well-Planned Operation and Maintenance
5.4. Maintenance of VIPs - What is Involved
5.5 Maintenance of a septic tank

Module 31: Off-site Sanitation

UNIT 1. WHAT IS OFF-SITE SANITATION?

UNIT 2:TRANSPORTATION FROM SITE TO PLANT

UNIT 3: PONDS AND OTHER RELATED SYSTEMS
3.1 Advantages of using ponds
3.2 Disadvantages of using ponds
3.3. Types of ponds
3.4 Maintenance of ponds

UNIT 4:CONVENTIONAL TREATMENT PLANTS
4.1 Screening
4.2 Grit Removal
4.3 Flow Meters
4.4 Sedimentation
4.5 Solids handling
4.6 Secondary Treatment Processes
4.7 Disinfection
4.8 Maturation Ponds
4.9 Effluent

UNIT 5:DISPOSAL OF SLUDGE
5.1 Classification of sludge types
5.2 Utilization of wastewater sludge as soil conditioner
5.3 Secondary pollution by wastewater sludge
5.4 Co-disposal of wastewater sludge and refuse in sanitary landfill

Module 32: Solid Waste Disposal

UNIT 1:WASTE GENERATION AND CLASSIFICATION

UNIT 2:WASTE DISPOSAL
2.1 Waste Storage
2.2 Waste Collection
2.3 Waste Transfer/Transportation
2.4 Reduction Potential and Disposal Options

UNIT 3. LANDFILL CLASSIFICATION, SELECTION AND DESIGN
3.1 Site Classification
3.2 Site Selection

UNIT 4. WASTE CONTROL LEGISLATION

UNIT 5: WASTE MANAGEMENT STRATEGY FOR SOUTH AFRICA

Module 33: Biological Activities in On- and Off-site Sanitation

UNIT 1: ECOSYSTEM

UNIT 2:MICRO-ORGANISMS RESPONSIBLE FOR STABILIZATION OF SEWAGE

UNIT 3: OXIDATION IN SEWAGE TREATMENT
3.1 Oxidation of sewage
3.2 Nitrogen cycle
3.3 Biological breakdown of organic matter

Module 34: Effects of on- and off-site sanitation on water resources

UNIT 1: SURFACE WATER
1.1 Self Purification
1.2 Contamination Of Surface Water
1.3 Eutrophication

UNIT 2: GROUND WATER
2.1 Pathogens In Groundwater
2.2 Contamination Of Groundwater

UNIT 3:EFFLUENT QUALITY

4.4. MANAGEMENT OF LEARNING MATERIAL

The management of the learning material by National Community Water and Sanitation Training Institute will be discussed under the following headings:

- Ownership of learning material;
- Duration of the programme; and
- Entry level.

4.4.1. Ownership of learning material

The development of the learning material for *MANAGEMENT OF COMMUNITY WATER AND SANITATION: A Local Government Training Programme* was funded by the Water Research Commission. National Community Water and Sanitation Training Institute (NCWSTI) developed the material in collaboration with other key players in the sector. The NCWSTI developed the material to build capacity in the water and sanitation sector and as such the material is to become public domain.

4.4.2. Duration of learning programme

The approximate duration of the learning programme is nine weeks assuming that the learners have had little if any previous exposure to the topics under discussion.

The timetable for offering the various modules is drawn up on the basis of the availability of group and individuals. The modules are offered on more than one occasion thereby offering learners the opportunity to attend each module at a convenient time.

4.4.3. Entry requirements

4.3.3.1 NCWSTI

The programme structure takes cognizance of the learners different educational and vocational backgrounds. Therefore to be a learner for this programme at the NCWSTI the only criteria for entrance into the course is that the learners must be involved with the supply of water and sanitation to the community.

4.3.3.2 NQF Level 5

However to gain credits toward a qualification on NQF Level 5 the learner will be required to meet all requirements of the NQF Level 4

qualification.

4.4.4. Certification

All modules are compulsory for the attainment of a certificate for MANAGEMENT OF COMMUNITY WATER AND SANITATION: *A Local Government Training Programme.*

4.5. CONCLUSION

This chapter dealt with the development of relevant learning material for the learning programme MANAGEMENT OF COMMUNITY WATER AND SANITATION: *A Local Government Training Programme.* The learning material was divided into modules and units to allow for greater flexibility in the use of the learning material.

Guidelines as to the ownership of the material, the duration of the programme and the entry level of learners were also developed.

CHAPTER 5

FACILITATOR'S GUIDELINES FOR EFFECTIVE LEARNING-CENTRED TRAINING

The facilitator must be aware of the integrated approach to education and training and a commitment to lifelong learning has been adopted in the development of the learning programme for the councillors and officials of the Local Government tasked with water and sanitation issues. The facilitator must take note of the content of Chapter 3 as it forms an intergral part of the guidelines for effective learning centred training.

This Chapter focuses on the following aspects that are imperative to effective Education and Training:

- effective facilitation;
- importance of first encounter with the learners;
- necessity for agreements and housekeeping;
- proposed methods of training; and
- proposed methods of assessment.

5.1. EFFECTIVE FACILITATION

For effective learning to take place the facilitator must be:

- Prepared. Preparation includes research, course design and practice. Preparation is a crucial ingredient for success.
- Exude energy. When you are excited about what you are doing, you communicate that excitement. Ways to project your energy includes eye contact, vocal variety and gestures.
- Encourage humour. Humour makes people more optimistic and better able to control their lives. Humour helps people to relax and provides a sense of group unity
- Think positive. Your expectations influence how people feel about themselves and the rate at which they learn. Believe in people's unlimited potential to grow and change.
- Be clear. Ensure what you say is easily grasped and understood. Avoid confusion and vagueness. Good ideas can be lost if there is difficulty in explaining them.
- Be sensitive. Check periodically to ascertain how the learners are feeling. Pay attention to verbal and non-verbal clues. Be responsive to the learners needs.

5.2. FIRST ENCOUNTER WITH LEARNERS

5.2.1 Introductions

Adult learners often have diverse feelings, questions and thoughts as they commence a new educational experience. The first encounter with the learners is of utmost importance. An atmosphere of safety and respect must be created in which learners feel they can speak freely and candidly without fear of criticism.

The facilitator needs to discuss learners' needs and expectations with them, what is expected of them and what they expect from the facilitator. Sisco (1991) suggests that the following three questions be addressed during the first meeting:

- Who are we as learners?
- Who am I as the facilitator?
- Why are we here?

5.2.1.1 Who are we as learners?

Allow learners to introduce themselves to the rest of the group and share something about themselves as people, their reason for attending the course and their expectations of the course.

5.2.1.2 Who am I as facilitator?

Establish your credibility with the learners by indicating your competence to lead the educational experience, but always make it clear that you do not have all the answers and that you want to be an active participant in the learning experience. Show that you are flexible and willing to respect learners' experiences and commitment.

5.2.1.3 Why are we here?

Adult learners want to know what they can expect and what is expected of them in the educational experience. The learners must:

- Be informed as to the purpose of the course;
- Be informed about the instructional process to be used;
- Know how they will benefit from the course;
- Know that their inputs are crucial and welcome.

5.2.2. Agreements and Housekeeping

Suggestions are taken from the learners as to the ground rules under which they will operate. Some of these agreements may be fixed i.e. meal times, transport arrangements etc. other items such as starting and finishing times each day, beginning on time even if all the learners are not present, length and times for meal and tea breaks etc. These can be written up on a flip chart and referred to throughout the course.

Ask learners to choose a small committee that can represent them in discussions and liase with the staff of the organising institution.

5.3 TRAINING METHODS, ASSESSMENT AND EVALUATION

For more information on the participatory training methods and methods of assessment and evaluation please refer to sections 3.2.4 and 3.2.5.

5.4 EVALUATION CRITERIA APPLICABLE TO PROGRAMMES OFFERED BY NATIONAL COMMUNITY WATER AND SANITATION TRAINING INSTITUTE.

National Community Water and Sanitation Training institute has criteria for evaluation of trainers, training methods and learning material which are applicable to all training programmes offered by NCWSTI. For more information please refer to section 3.3 for further information.

5.5. MOTIVATION

The adult learner has multiple role involvement with different competing responsibilities. The more compelling these responsibilities the greater the need for a programme that can sustain their interest and involvement. The facilitator must always ask the questions "How can I help the learners to persist?" "What can I do to help them want to learn what the programme offers?" These are all issues of motivation. In this chapter strategies are proposed, that the facilitator can use to enhance learner motivation.

Motivation in the learning situation refers to the those processes that can:

- stimulate and instigate behaviour;
- give direction and purpose to behaviour;

- continue to allow behaviour to persist; and
- lead to choosing or preferring a particular behaviour.

Proposed strategies on how to address resistance to learning and to enhance adult learner motivation are:

- make the first experience safe, successful and interesting;
- hold high but realistic expectations for learners;
- involve learners in educational planning
- research learners backgrounds and cultures
- help learners to explore their existing knowledge and the way it was acquired
- create an organised and orderly learning environment;
- foster successful learning;
- explain learning aims and intentions as clearly as possible;
- explain evaluation criteria as clearly as possible;
- promote learner's self-determination within the learning experience;
- know and emphasise the expressed needs of learners throughout the educational process
- emphasise the benefits of learning;
- plan activities to allow all learners to share what they have learned and produced;
- provide variety in the processes and materials used for learning;
- make abstract content more personal and familiar;
- use co-operative goal structures to advance desired learning outcomes;
- do not push too fast;
- provide prompt and consistent feedback;
- conduct regular formative evaluation sessions; and
- use performance evaluation procedures.

The facilitator must attempt to use as many of the motivational strategies as possible. These motivational strategies will now be explained in more detail

i. make the first experience safe, successful and interesting;

For more information regarding the first encounter with the learners please refer to Chapter 3.5.

ii. hold high but realistic expectations for learners;

Expectations must be high enough to motivate learners to do their best, but not so high that learners will become frustrated trying to meet the facilitators expectations

iii. involve learners in educational planning

Involve the learner in determining the general focus, specific content, educational methods and assessment procedures included in the learning

programme.

iv. research learners backgrounds and cultures

Enquire about learners' backgrounds. This will help the facilitator not to use methods or materials that may be offensive or incomprehensible.

v. help learners to explore their existing knowledge and the way it was acquired

For new knowledge to be acquired it must mesh with the learner's existing knowledge that will result in existing knowledge being transformed. The facilitator must help the learners explore their existing knowledge so that long held beliefs that may hinder new learning can be examined and explored. Only when this existing knowledge has been taken into account will new knowledge be gained.

vi. create an organised and orderly learning environment;

The learners need a sense of orderliness within the learning situation to use as a base to leap into the learning process. They should know what to expect from the facilitator, what is expected from them, what administrative procedures are applicable etc. This however does not mean that the educational situation must be without imagination and variety.

vii. foster successful learning;

Learners who experience learning success are positive and motivated. There must be clear standards for mastering and excellence, learners must be provided with feedback on the progress of their learning and success must always be emphasised.

viii. explain learning aims and intentions as clearly as possible;

Learners learn better if they know what they are expected to learn and why they are supposed to develop skills, explore concepts and participate in exercises suggested by the facilitator.

ix. explain evaluation criteria as clearly as possible;

Evaluation criteria must be clear. Provide learners with indicators of success as this enables the learner to do self-evaluation.

x. promote learner's self-determination within the learning experience;

Adult learners must be given the opportunity to initiate, direct and control their own learning. A needs analysis and dialogue involve the learners in the

learning process. If learners are actively involved they will assume responsibility for their own learning.

xi. **know and emphasise the expressed needs of learners throughout the educational process;**

Learners learn best when the learning situation satisfies their needs.

xii. **emphasise the benefits of learning;**

Always explain the benefits of the learning programme in terms of personal, occupational or professional development.

xiii. **plan activities to allow all learners to share what they have learned and produced;**

When learners know from the outset that their learning outcomes will be shared with their fellow-learners, their motivation for the learning task is usually enhanced. The emphasis should be on sharing, obtaining feedback and learning from each other.

xiv. **provide variety in the processes and materials used for learning;**

Always use a combination of training methods, media etc. as variety has motivational effects on the learners.

xv. **make abstract content more personal and familiar;**

Always link content to the learners daily lives. Use examples relevant to the group, case studies etc.

xvi. **use co-operative goal structures to advance desired learning outcomes;**

Co-operative structures exist when a group of learners work toward a shared goal that is group work promotes positive interpersonal relationships, high emotional involvement in productivity and reduces the fear of failure.

xvii. **do not push too fast;**

The amount of content covered is not as important as what learners learn. Do not attempt to accomplish too much in a short space of time as this will not influence the learner positively.

xviii. **provide prompt and consistent feedback;**

Feedback enhances motivation because it allows learners to evaluate their progress, to understand their levels of competence, sustaind their efforts and promptly corrects errors.

xix. conduct regular formative evaluation sessions; and

For a positive attitude allow learners to provide feedback on how they experience the learning situation and how they view their progress.

xx. use performance evaluation procedures.

Allow learners to construct real or simulated situations in which the learners perform a sample of the behaviours with which the given experience is concerned.

CONCLUSION

In this chapter the obstacles that adult learners may encounter in the learning situation were discussed. Suggestions were made regarding the use of different strategies to be adopted by the facilitator to enhance adult motivation in the learning situation if the learning- centred approach is used.

CHAPTER 6

EXPLANATION OF TERMS

Explanation of relevant terminology as quoted in The Green Paper on Further Education and Training, 1998.

"**accreditation**

a procedure by which an authoritative body gives formal recognition that an institute, body or person is competent in terms of a specific person

accrediting body

the authority that is acknowledged as having the right to grant accreditation to an institution of higher learning and/or vocational training, programme of study or service

assessment

the process of collecting and interpreting evidence of learner achievement

competence

"... the capacity for continuing performance within specified ranges and contexts resulting from the integration of a number of specific outcomes. The recognition of competence in this sense could be the award of a credit towards a qualification or the award of a qualification

credit

the recognition by an accredited body that a learner has satisfied the outcomes of a unit of learning expressed as a credit value at a specified level. Credits may be accumulated until conditions have been met for the award of a qualification

critical cross- field outcomes

broad cross-curricula outcomes that focus on the capacity to apply knowledge, skills and attitudes in an integrated way

curriculum framework

the philosophical and organisational framework for specific curriculum

evaluation

the process whereby the information obtained through assessment is interpreted to make judgements about a learner's competence

field of learning

an area of learning used as an organisational mechanism for the National Qualification Framework (NQF)

flexibility

the facility of the qualifications system to meet the needs of learners, providers, industry and service sectors

levels

the positions on the NQF where national unit standards are registered and/or qualifications awarded. These levels are arranged to signal increasing complexity in learning to facilitate meaningful progression routes along career and learning pathways

National Qualifications Framework (NQF)

the framework approved by the Minister of Education for the registration of national standards and qualifications

National Standards Body (NSB)

a body responsible for establishing education and training standards or qualifications, to which specific functions relating to the registration of national standards and qualifications have been assigned

outcomes

segments of unit standards which are statements of the required learner capabilities that must be demonstrated. Outcomes are specified by stated performances and assessment and range criteria

qualification

a planned combination of learning outcomes which has a defined purpose and which is intended to provide qualifying learners with applied competence and a basis for further learning

specific

contextually demonstrated knowledge, skills and outcomes attitudes, reflecting essential outcomes

Standard Generating Bodies (SGB)

a body responsible for establishing education and training standards or qualifications, and to which specific functions relating to the establishment of national standards and qualifications can be assigned

unit standards

nationally agreed and internationally comparable statements of outcomes and their associated performance/assessment criteria together with administrative and other necessary information. Unit standards are registered on the NQF at a defined level".

CHAPTER 7
CONCLUSION

The development of this document was started in 1997 and during the following years the water sector and the Local Government sector underwent many policy changes. NCWSTI attempted to keep abreast of all the changes, however the Institute is not claiming that all the latest developments are reflected in the documents.

The Institute is of the opinion that this document provides the basis for any further developments on capacity building and the transfer of functions to Local Government sector. As education and training is a dynamic process, learning material developed will serve as a foundation but will need to be updated regularly to keep abreast of all the developments.

The development of the learning material and the subsequent process of attempting to register the training programme with the Department of Education has enabled the sector to take the pioneering step in the development of unit standards for this much needed training programme for the water sector.

It is realised that this training programme is only a very small part of the complex training needs of the sector.

It is hoped that a similar exercise of harmonising the training programmes can take place which will also facilitate the process of generation of unit standards for the water sector.

It is suggested that further funding be sought for the generation of unit standards for the water sector and for completion of the consultative process for the unit standards for this programme. The generation of unit standards for this programme can be seen as a constructive initiative which will be advantageous to the entire water sector.

Way Forward:

A marketing strategy for the learning material needs to be developed. This can include the development of a promotional brochure and workshops with the relevant role players in the sector.

Promotional Brochure:

A promotional brochure needs to be prepared This brochure should inform the reader of the development of the training programme and give a detailed outline the learning material for the programme *Management of Community Water and Sanitation: A training programme for Local Government.* This brochure will ensure that the

development of learning material for capacity building of local government councillors and officials tasked with supply of water and sanitation services is not duplicated.

This brochure will be forwarded to the national, provincial and regional offices of the local government sector, water and sanitation sector and health sector. Other recipients identified are the national and provincial offices of South African Local Government Association (SALGA), South African Qualification Authority (SAQA), Sector Education Training Authority (SETA) and National Standards Bodies (NSB) and the relevant Standard Generating Bodies (SGB).

Workshops:

Workshops, with relevant role players, need to be organised at regional level. At these workshops the process and the content of the learning material, which resulted in an integrated, holistic training programme for councillors and officials of local government, will be presented. Material, for presentation at these workshops should be prepared and dates and venues need to be determined.

Both the promotional brochure and the workshops will assist in the successful marketing of the learning material developed by National Community Water and Sanitation Training Institute with support from Water Research Commission.

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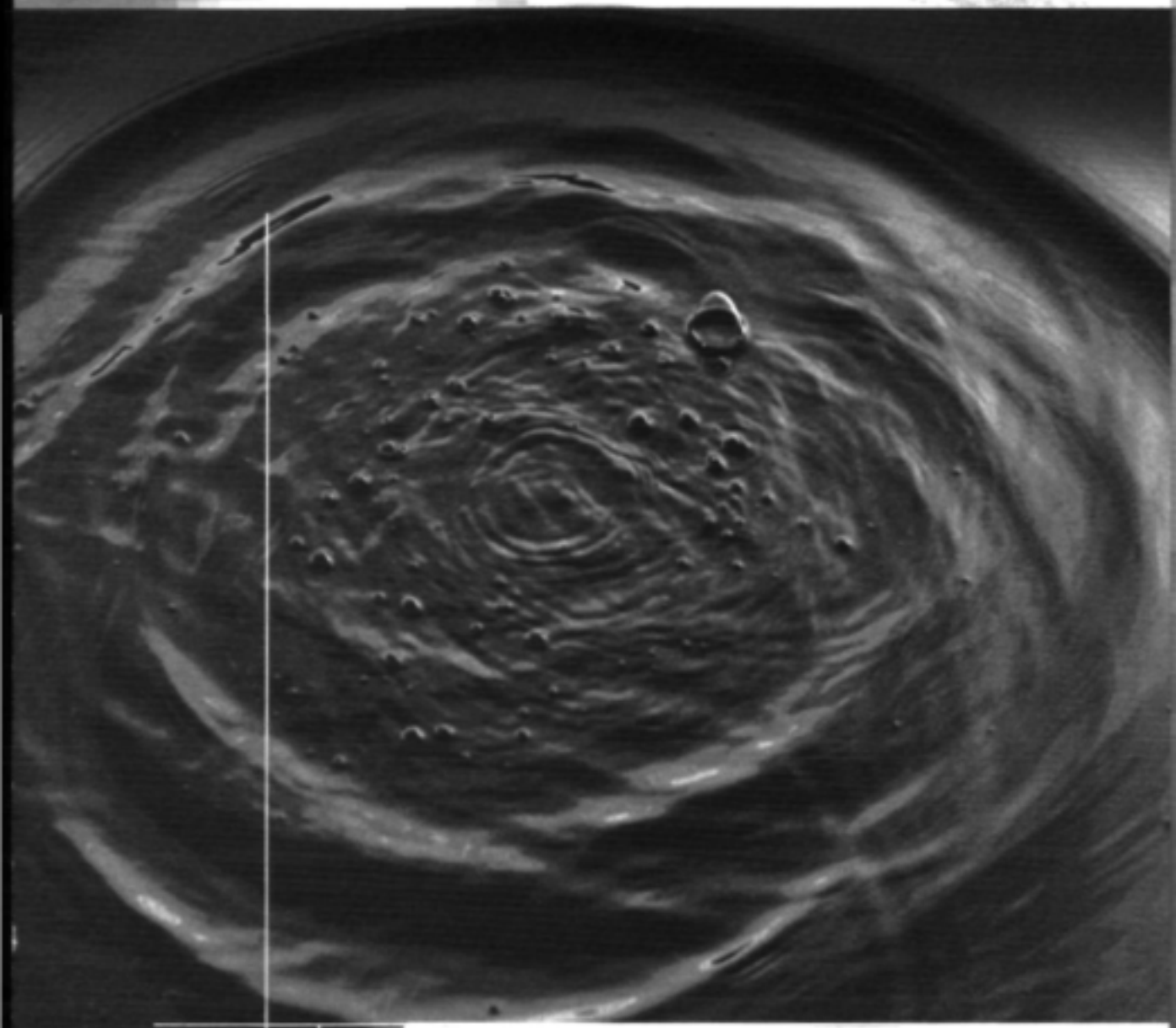

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