

HYDROLOGY PROJECT

TECHNICAL ASSISTANCE

Training module

**How to develop a
training programme**

Table of contents

1. Module context	Page 3
2. Module profile	Page 4
3. Session plan	Page 5
4. Evaluation	Page 8
5. Overhead sheets	Page 9
6. Handouts	Page 27
7. Main text	Page 46

1 *Module context*

This module is one of the category *Training skills*, meant for trainers who wish to improve their training skills. No prior training in other modules is needed to complete this module successfully. Modules in this category include:

Module	Code	Objectives
How to develop a training programme	Gen ...	<ul style="list-style-type: none">• Understand the importance of training• Develop training programmes• Develop training modules
How to manage training	Gen ...	<ul style="list-style-type: none">• Scheduling the preparation and implementation of a training programme• Understand administrative responsibility and organisational arrangements• Maintain training records
Basic training skills	Gen ...	<ul style="list-style-type: none">• Deliver effective presentations• Give clear demonstrations and guide exercises• Facilitate group discussions• Select appropriate training methods for given objectives• Become aware of personal strengths and weaknesses in basic communication skills and start a personal improvement plan

2 *Module profile*

<i>TITLE</i>	:	How to develop a training programme
<i>TARGET GROUP</i>	:	Water Quality trainers
<i>DURATION</i>	:	1 session of 300 minutes.
<i>OBJECTIVES</i>	:	After the training the participants will be able to : - Understand the importance of training - Develop training programme - Develop training modules
<i>KEY CONCEPTS</i>	:	* Training needs * Components of training * Training development steps * Steps for producing a module. * Evaluation processes
<i>TRAINING METHODS</i>	:	Open inventory, lecture & questioning.
<i>TRAINING AIDS</i>	:	Overhead projector, overhead sheets, flip chart
<i>HANDOUT</i>	:	Copy of overhead sheets and main text.
<i>REFERENCE READING</i>	:	* THE INSTRUCTOR'S POCKETBOOK by John Townsend. * NOTES FOR MANAGERS <i>TRAINING YOUR STAFF</i> by Winifred Gode

3. Session plan

1	<p>The need for training Question participants on the need for training and list key points</p> <p>2 Summarise and conclude that training is not always a good solution to solve organisational problems</p> <p>3 Describe the needs assessment process in laboratories.</p>	30 min	OHS Flip chart OHS
3	<p>Exercise: <i>needs analysis in an organisation</i></p> <p>1. Give participants a set of organisational problems.</p> <p>2. Ask to write out possible training and non training solutions (individual)</p> <p>3. Ask to compile and test findings in 4 groups</p> <p>4. Make plenary inventory of findings</p> <p>5. Provide examples of professional responses (NOT IN HANDOUT). Distribute copies.</p>	60 min 15 min. 20 min. 15 min.	OHS & Handout with example problems Additional handout
4	<p>Getting started with training development: <i>who takes the lead?</i></p> <p>1. Explain reservations towards training</p> <p>2. Explain 2 x 5 W from demand and supply side</p> <p>3. Ask how matching supply and demand would be possible in the HP. Stress the need for consultations with beneficiaries. Does this ever take place?</p>	15 min	OHS OHS OHS

5	<p>The training development cycle 20 min</p> <p>1. Ask participants how they would develop their training programme. List points on flipchart.</p> <p>2. Explain training development cycle</p>	<p>OHS</p> <p>OHS</p>
6	<p>Cycle highlights: <i>Training objectives</i> 10 min</p> <p>Stress importance of objectives and discuss how objectives are formulated.</p> <p>(No exercise here)</p>	<p>OHS</p>
7	<p>Cycle highlights: <i>Module production</i> 15 min</p> <p>1. Describe module format and production steps</p> <p>2. Distribute (or circulate) example module as available</p> <p>3. Ask participants to refer to <i>module titles</i> list</p>	<p>OHS</p> <p>Example module</p> <p>Handout</p>
8	<p>Cycle highlights: <i>Module production</i> 15 min</p> <p>1. Recap module format and production steps</p>	<p>OHS</p>
8	<p>Exercise: <i>how to process new information in your training (text analysis)</i> 60 min</p> <p>1. <i>Individually:</i> Distribute text and (vague) training objective for KSA analysis, better objective and session plan 15 min.</p> <p>2. <i>In 4 groups:</i> ask to compare and consolidate findings 20 min</p> <p>3. <i>Plenary:</i> Invite representative of one group to present result. Facilitate discussion. Comment on useful and not so useful ideas 25 min</p> <p>In the provided text on</p>	<p>New handout & OHS</p> <p>Handout pg</p>
9	<p>Cycle highlights: <i>Module production</i> 15 min.</p> <p>1. Ask participants to select module titles they would produce</p> <p>2. Collect handout for analysing results</p>	<p>Handout module list</p>

10	Cycle highlights: <i>evaluation by trainers (curr dev checklist)</i> 10 min 1. Ask to go through the curriculum development checklist in handouts 2. Clarify questions.	OHS Handout page
11	Cycle highlights: <i>evaluation by trainees</i> 15 min	OHS Handout page
12	Cycle highlights: <i>Module production</i> 15 min 1. Announce findings of <i>Module production</i> matrix 2. Discuss plans for future bi lateral meetings.	

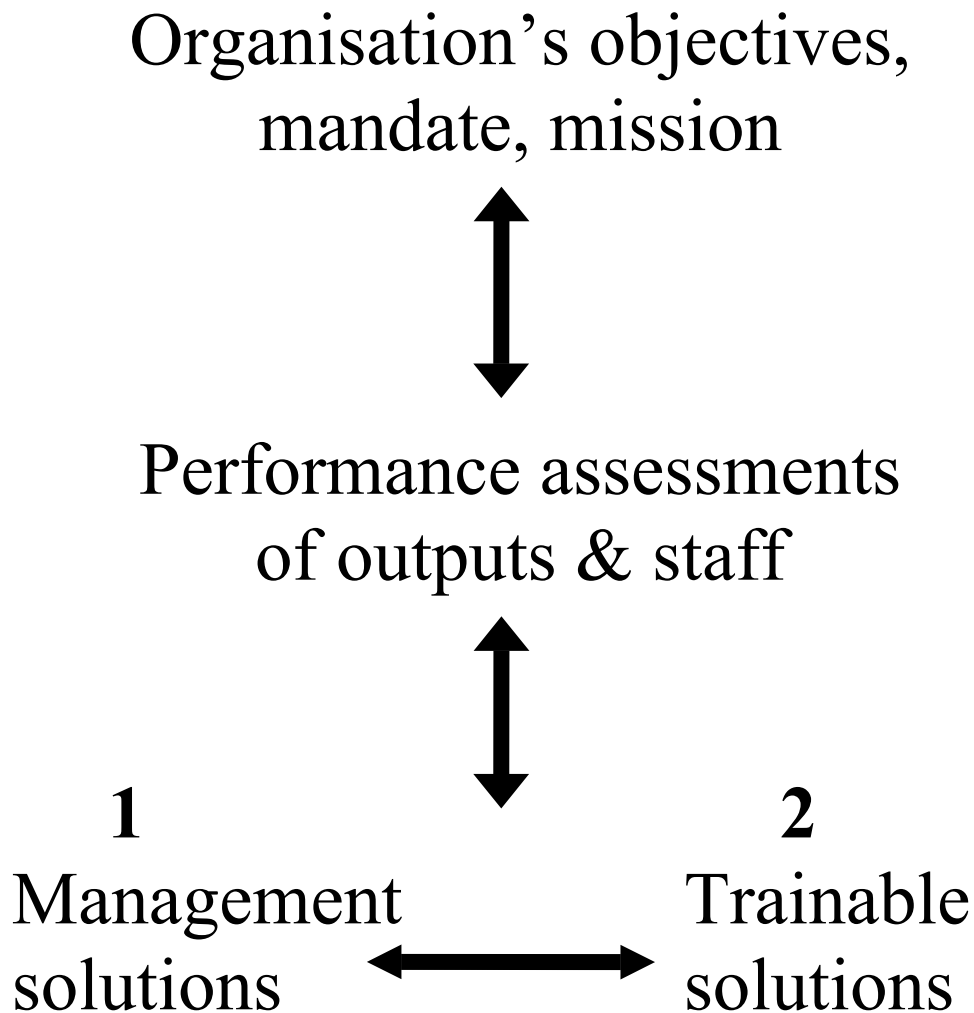
4 Suggestions for evaluation

To check whether participants understood the course development steps and the module production steps, observe their performance during the session.

5 Overhead sheets

Why training ?

Recognition of training needs



How would you address the performance problems in your laboratory through training?

(refer page 27 in your handout)

Some professional responses

Too late at work

- This problem can not be solved through training
- Fact finding needed to know the real reasons
- As a trainer I would never take the role of a supervisor and tell people to be on time
- To convince people to be on time, other arguments are needed
- Perhaps people do not know how to manage their time: training in time management can help.

35% of data are not reliable

- Just distributing a manual is not enough.
- If 65% is reliable, most staff probably knows how to do their work. Perhaps selected regions need training.
- Is there a high turnover of staff and a need for regular induction training for all new staff ?
- Are the instruments working properly ?
- Are the supervisors doing enough spot checks. Do they know how to do them ? If not: train them.

Water quality labs, equipment, staff

- This is a mixture of 3 different types of problems. Better separate and solve one by one
- Organise study visits to example labs in India

Involve consultants for one-to-one coaching;

Hands on Training

- Organise workshops on difficult problems: procurement, bidding, lab lay-out etc.
- Basic chemistry training (remedial) seems inevitable under the HP. Goes on top of standard staff training.

“Training is important, but.....”

- Can't we survive without training ?
- Does everybody need training ?
- Can we deliver training ourselves ?
- Is there time to participate ?
- Do we have the facilities ?
- Where is the budget ?
- Are we to be judged ?
- Can we expect any real improvements ?
- Where are the modules ?
- Who takes the initiative to start training ?

The 5 Ws of Water Quality

Why is training needed ?

What is to be trained and *What* type of training would fit ?

Who is to be trained ?

When is the training to take place?

Where does it take place ?

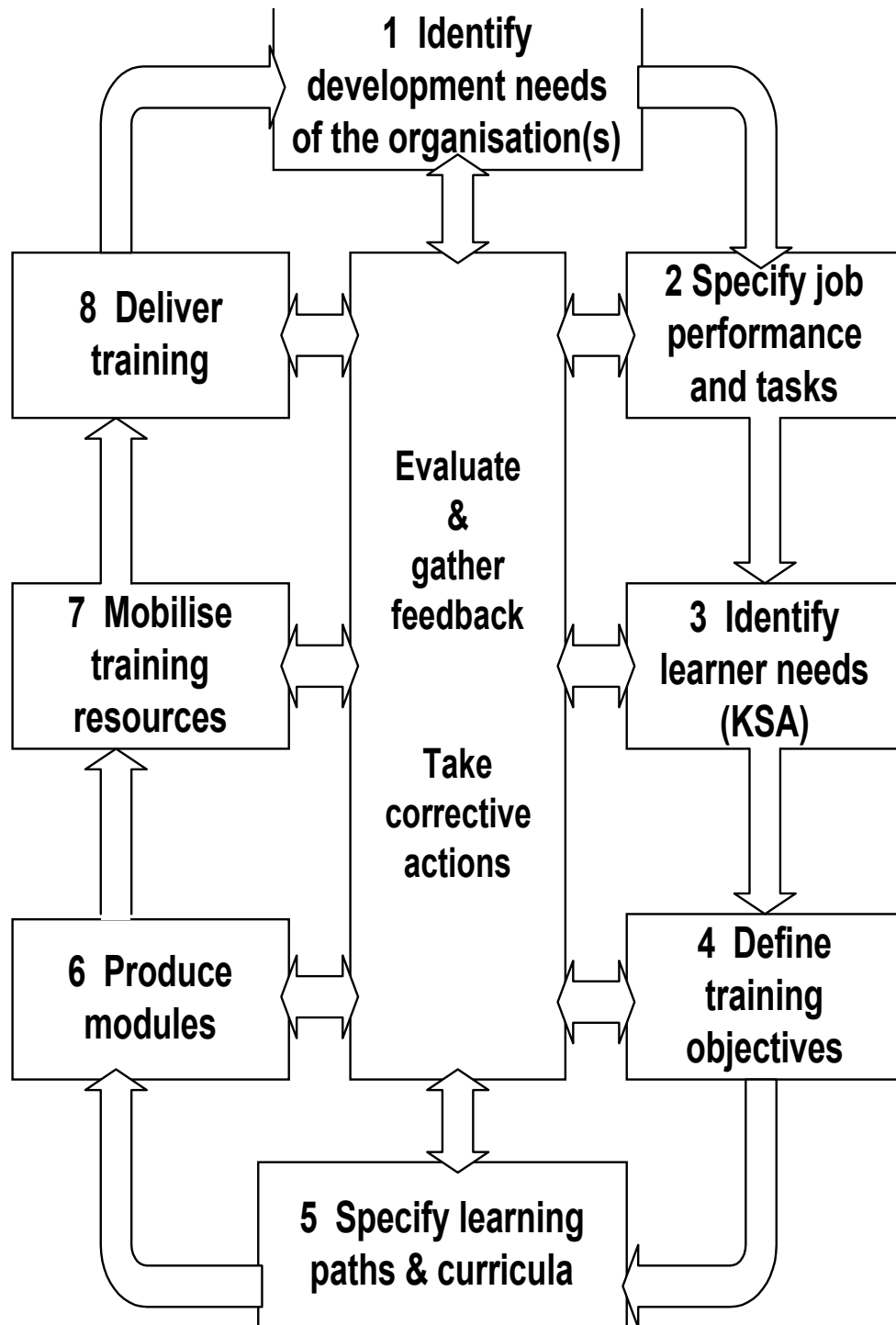
How do we match ?

training demands

with

training supply

*Which steps would you take
to develop a
training programme?*



Training objectives

- **Levels:** department, staff, training course, sessions & module, small events in a training session
- **Job related** (and nothing else)
- **Describe changes** which take place during and after the training course
- Use **active verbs** to indicate what participants will be able to **do**
- Try to **quantify** intended changes and actions

Module production steps

- Step 1 Write or obtain a valid technical text (lecture notes)
- Step 2 Prepare module profile sheet
- Step 3 Consider module context
- Step 4 Make session plans
- Step 5 Specify evaluation method
- Step 6 Produce overhead sheets
- Step 7 Produce handouts

HP module format

1. Cover page
2. Table of contents
3. Module context
4. Module profile sheet
5. Session plan
6. Evaluation
7. Overhead sheets (masters)
8. Special handouts (masters)
9. Table of contents for main text
10. Main text
11. Annexes for main text

Module production

(refer page 34 in your handout)

How to analyse and select (new) information for your training sessions?

Example: *Which information is useful in a training session where participants have to learn ‘how to measure total alkalinity’.*

1. Go through the text, individually
2. Mark **k**nowledge, **s**kills and **a**ttitude parts
3. Note essential and not so essential parts
4. Check ideas with others
5. How would you deliver the training ?
6. Note results on exercise sheets in handout **page 38**.

Curriculum & module development checklist

See page 41 in your handout

Training evaluation

What

1. Did **participants** benefit ?
2. Could the **trainers** do better ?
3. Are the **materials** useful ?
4. What about the **logistics** ?

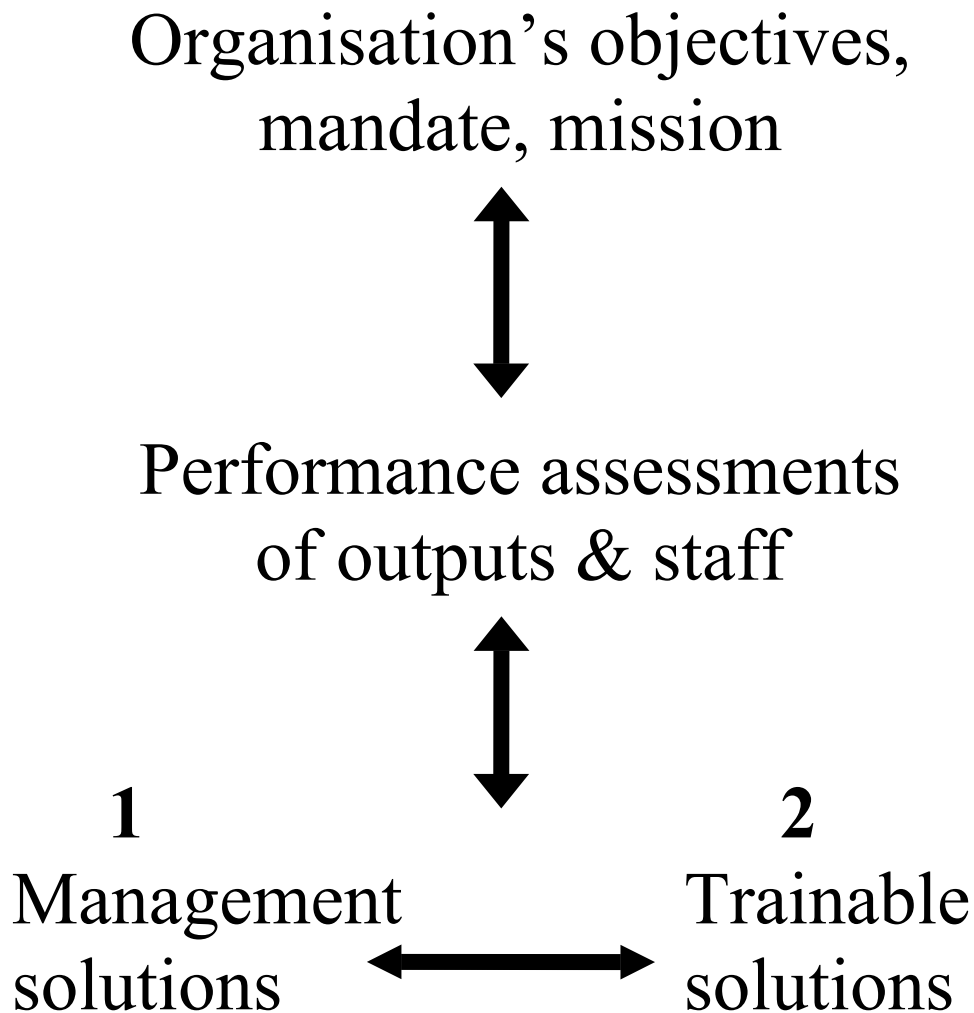
How

1. Observe the participants during training
2. Use evaluation forms in your handout **page 44**. Adapt as needed.
3. Take corrective actions.

Training development for trainers: handouts

Why training ?

Recognition of training needs



Training needs analysis

Exercise 1:

How would you advise your hydrology organisation to solve the performance problems in the laboratory through training?

As trainer, you are invited to join a series of management meetings in which the performance of the hydrology organization is reviewed and corrective actions are decided. The management is willing to listen to your suggestions to improve staff performance through training activities. They have a big budget available for training programmes, which are to be developed by you. You are free to organise the training as in-house provision in the organisation itself, at institutes in your State, elsewhere in India and even abroad.

It is made clear to you, that if your training programmes will not result in improved staff performance, the training programme will be stopped, you loose your involvement as training advisor and no training cost will be paid. No cure, no payment. In other words, you have to be careful with your promises on training effects.

At the first meeting, you do not really know what is going on in the organization and why certain problems exist. The boss-in-charge kicks off the session and summarizes his analysis of the problems, in his own typical way, as quoted below. How would you respond from a training point of view to each of these three issues?

1. *“In this laboratory, we are supposed to start working at 09.00 in the morning. But, half of the Staff reaches the office at 10.00. Those people who are on time do not start working before 11.00. I think they do not know how to read the clock. They also do not realize what damage they cause to the image of the organisation and the backlog of work created. You tell and train these people to reach the laboratory on time.”*

2 *“We are supposed to collect and valdate data on water quality in our State. However at least 35 % of the data is erroneous. This means that the 600 lab staff are just not doing their job properly. I suggest we provide them a manual with the right procedures. That will teach them how to do it.”*

3 *“Under the Hydrology Project, we are supposed to build additional laboratories and procure equipment for water quality analysis. I expect enormous delays and problems in this matter because we do not precisely know what we should buy, what the World Bank procedures are for construction works and procurement, and I can not find the proper people to staff the laboratories. Graduates from local chemistry training institutes do not even know the basic water quality parameters.”*

Some professional responses

Too late at work

- This problem can not be solved through training
- Fact finding needed to know the real reasons
- As a trainer I would never take the role of a supervisor and tell people to be on time
- To convince people to be on time, other arguments are needed
- Perhaps people do not know how to manage their time: training in time management can help.

35% of data are not reliable

- Just distributing a manual is not enough.
- If 65% is reliable, most staff probably knows how to do their work. Perhaps selected regions need training.
- Is there a high turnover of staff and a need for regular induction training for all new staff ?
- Are the instruments working properly ?
- Are the supervisors doing enough spot checks. Do they know how to do them ? If not: train them.

Water quality labs, equipment, staff

- This is a mixture of 3 different types of problems. Better separate and solve one by one
- Organise study visits to example labs in India
- Involve consultants for one-to-one coaching
- Organise workshops on difficult problems: procurement, bidding, lab lay-out etc.
- Basic chemistry training (remedial) seems inevitable under the HP. Goes on top of standard staff training.

“Training is important, but....”

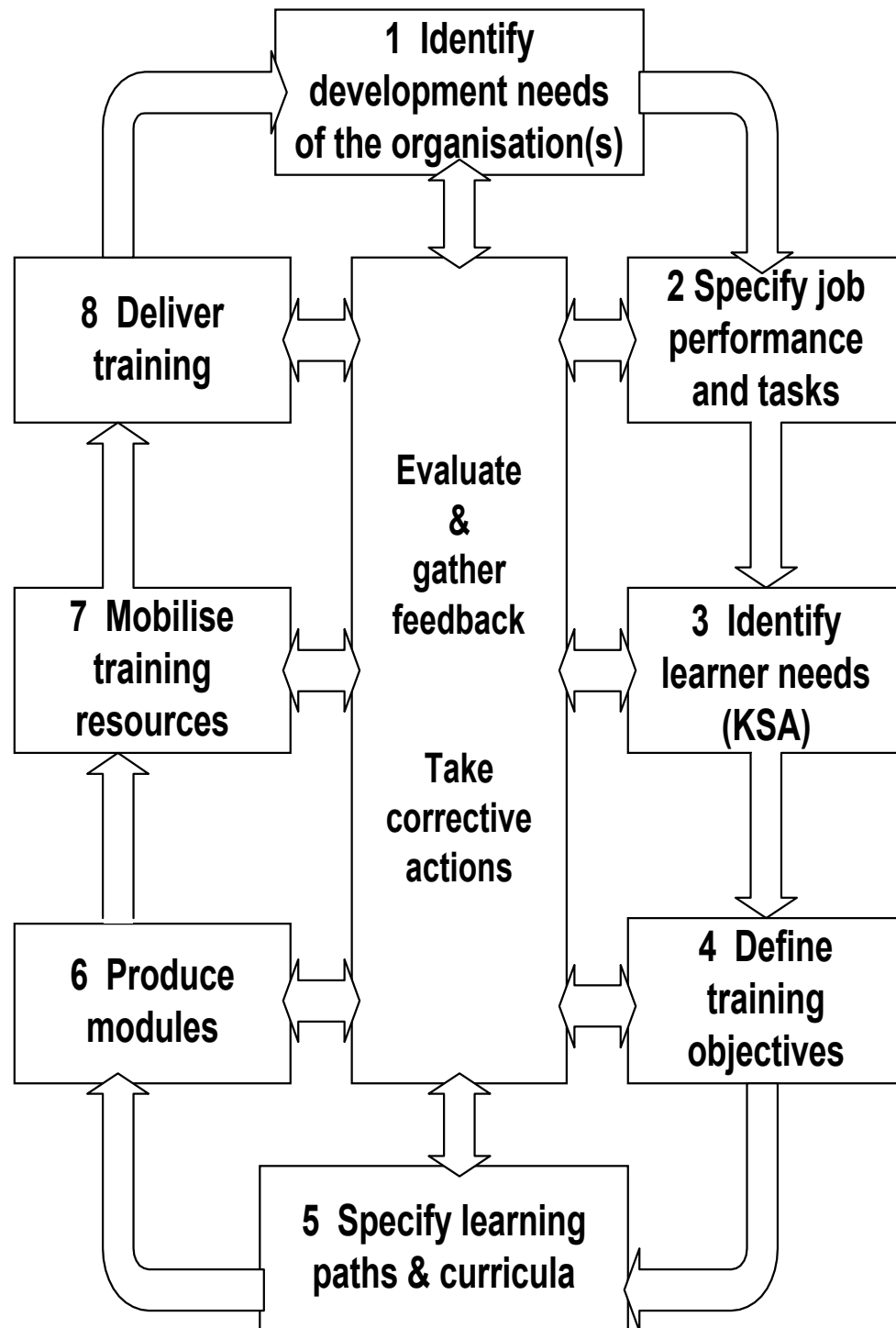
- Can't we survive without training ?
- Does everybody need training ?
- Can't we deliver training ourselves ?
- Is there time to participate ?
- Do we have the facilities ?
- Where is the budget ?
- Are we to be judged ?
- Can we expect any real improvements ?
- Where is the training calendar of CTI ?
- Where are the modules ?
- Who takes the initiative to start training ?

The 5 Ws of Water Quality

- *Why* is training needed ?
- *What* is to be trained and *What* type of training would fit ?
- *Who* is to be trained ?
- *When* is the training to take place?
- *Where* does it take place ?

How do we match

training demands *with* training supply



Training objectives

- **Levels:** department, staff, training course, sessions & module, small events in a training session
- **Job related** (and nothing else)
- **Describe changes** which take place during and after the training course
- Use **active verbs** to indicate what participants will be able to **do**
- Try to **quantify** intended changes and actions

Module production steps

Step 1 Write or obtain a valid technical text (**lecture notes**)

Step 2 Prepare module **profile sheet**

Step 3 Consider module **context**

Step 4 Make **session plans**

Step 5 Specify **evaluation** method

Step 6 Produce **overhead sheets**

Step 7 Produce **handouts**

HP module format

1. **Cover page**
2. **Table of contents**
3. **Module context**
4. **Module profile sheet**
5. **Session plan**
6. **Evaluation**
7. **Overhead sheets (masters)**
8. **Special handouts (masters)**
9. **Table of contents for main text**
10. **Main text**
11. **Annexes for main text**

Module titles

Key Concepts

1. Basic Water Quality Concepts

- pollutants

2.	Basic Chemistry Concepts	<ul style="list-style-type: none"> • ambient quality • monitoring • units • elements • compounds • equivalent weights
3.	The Need for Good Laboratory Practice in field laboratories	<ul style="list-style-type: none"> • sample devices • sample containers • preservation of samples • glassware cleaning • distilled water • data recording
4.	Preparation of a Standard Solution	<ul style="list-style-type: none"> • balance • glassware • quality of chemicals
5.	Basic Aquatic Chemistry Concepts	<ul style="list-style-type: none"> • ionisation constants • acid base equilibria • construction of buffers • ionic strength and activity
6.	Hydrogen Ion Concentration/pH	<ul style="list-style-type: none"> • definition • pH scale • measurement
7.	Measurement of pH	<ul style="list-style-type: none"> • principle of method • pH-meter/electrodes • precautions/reporting/other methods
8.	Measurement of Total Hardness	<ul style="list-style-type: none"> • EDTA titrimetric method • precautions/reporting/other methods
9.	Measurement of Alkalinity, Total and Phenolphthalein	<ul style="list-style-type: none"> • titrimetric method • precautions/reporting/other methods
10.	Electrical Conductivity	<ul style="list-style-type: none"> • definition • principle of EC meter/cell • cell constant • temperature correction
11.	Measurement of Electrical Conductivity	<ul style="list-style-type: none"> • EC meter/conductivity cell • method/precautions/reporting • calculation methods
12.	Measurement of Solids	<ul style="list-style-type: none"> • principle of gravimetric method • precautions/reporting • other methods
13.	Dissolved Oxygen	<ul style="list-style-type: none"> • significance • solubility of DO • sampling • chemistry of Winkler method
14.	Measurement of Dissolved Oxygen	<ul style="list-style-type: none"> • method/precautions/reporting • effect of storage • accuracy of method • other methods

Module Titles	Key Concepts
15. Sampling Procedures	<ul style="list-style-type: none"> • representative samples • forms of sampling (grab, composite etc.) • location of sampling site
16. Biochemical Oxygen Demand/BOD	<ul style="list-style-type: none"> • significance • effect of temperature • 3 and 5 day tests • seeding • nitrification
17. Measurement of BOD	<ul style="list-style-type: none"> • rate constant of decomposition • estimating required dilution • diluting the samples • method/precautions/reporting • quality control • relation with COD test
18. Chemical Oxygen Demand COD	<ul style="list-style-type: none"> • significance • theoretical demand • chemistry of COD test • open and close reflux methods • relation with BOD test
19. Measurement of COD	<ul style="list-style-type: none"> • open reflux method principle • method/precaution/reporting
20. Introduction to Microbiology	<ul style="list-style-type: none"> • classification • growth • nutrition • biochemical reactions
21. Microbiological Laboratory Techniques	<ul style="list-style-type: none"> • culture of micro-organisms • solid and liquid media • laboratory techniques • identification of micro-organisms
22. Coliforms as indicator of Faecal Pollution	<ul style="list-style-type: none"> • faecal pollution • indicator organisms • multiple tube fermentation • MPN tables • other methods/membrane filter
23. Measurement of Coliforms	<ul style="list-style-type: none"> • multiple tube fermentation • total and faecal Coliforms • reporting
24. Oxygen Balance in Surface Waters	<ul style="list-style-type: none"> • effect on Water Quality • sources and sinks • sag curve • model
25. Plant Nutrients in Water	<ul style="list-style-type: none"> • growth requirements • nutrient cycles • eutrophication • chlorophyll
26. Instruments for Potentiometric Analysis	<ul style="list-style-type: none"> • potentiometric analysis • EC meter • pH meter • specific ion meter

Module Titles	Key Concepts
27. Instruments for Absorption Spectroscopy	<ul style="list-style-type: none"> • absorption spectroscopy • photometers • UV/visible spectrophotometers • applications
28. Measurement of Chlorophyll	<ul style="list-style-type: none"> • significance • spectrophotometric method • precautions/reporting/other methods
29. Measurement of Nitrogen, Ammonia and Organic	<ul style="list-style-type: none"> • significance • Kjeldahl titrimetric method and phenate method • precautions/reporting/other methods
30. Measurement of Nitrogen, Nitrate	<ul style="list-style-type: none"> • significance • UV spectrophotometric method • precautions/reporting/other methods
31. Measurement of Phosphorus	<ul style="list-style-type: none"> • significance • ascorbic acid method • precautions/reporting/other methods
32. Advanced Water Quality Concepts	<ul style="list-style-type: none"> • use related standards • monitoring network • data analysis
33. Ions in Water (inorganic)	<ul style="list-style-type: none"> • sources • ion balance • hardness/SAR/salinity/health effects • presentation methods
34. Measurement of Boron	<ul style="list-style-type: none"> • significance • curcumin method • precautions/reporting/other methods
35. Measurement of Fluoride	<ul style="list-style-type: none"> • significance • SPADNS method • precautions/reporting/other methods
36. Measurement of Iron	<ul style="list-style-type: none"> • Significance • phenanthroline method • precautions/reporting/other methods
37. Instruments for Emission Spectroscopy and Nephelometry	<ul style="list-style-type: none"> • flame emission spectroscopy • flame photometers • turbidity meter • applications
38. Measurement of Sodium	<ul style="list-style-type: none"> • significance • flame emission photometry method • precautions/reporting/other methods
39. Measurement of Sulphate	<ul style="list-style-type: none"> • significance • turbidimetric method • precautions/reporting/other methods
40. Advanced Aquatic Chemistry Concepts	<ul style="list-style-type: none"> • solubility equilibrium • oxidation-reduction equilibrium • equilibrium diagrams • natural organic compounds

Module Titles	Key Concepts
41. Behavior of Trace Compounds in Aquatic Environment	<ul style="list-style-type: none"> • classification of trace contaminants • environmental effects • speciation of heavy metals • degradation of trace organics • adsorption of trace compounds
42. Introduction to Advanced Instrumental Analysis	<ul style="list-style-type: none"> • principle of AAS and GC • atomic absorption spectrophotometer • gas chromatograph • precautions/other methods
43. Preparing Samples for AAS	<ul style="list-style-type: none"> • extraction • digestion • concentration • biological samples
44. Maintaining Laboratory Equipment	<ul style="list-style-type: none"> • need for preventive maintenance • maintenance techniques • what can you do yourself
45. Laboratory Management	<ul style="list-style-type: none"> • planning analysis of samples • clean laboratory • distilled water • sample storage • purity of chemicals • data recording and validation • AQC
46. Basic Statistics	<ul style="list-style-type: none"> • frequency distributions • mean • standard deviation • normal distribution • population samples • confidence limits
47. Applied Statistics	<ul style="list-style-type: none"> • estimates of mean and standard deviation • significance testing • regression analysis
48. Quality Assurance Programme	<ul style="list-style-type: none"> • Components and their description
49. Analytical Quality Control	<ul style="list-style-type: none"> • accuracy/precision/bias definitions • within- and inter-laboratory AQC • recovery of known additions • reagent blanks • analysis of duplicates • control charts
50. Data Reporting and Validation	<ul style="list-style-type: none"> • significant numbers • detection limits • extrapolation • relevant information to record • primary validation procedures

How to analyse and select (new) information for your training sessions?

Example: *Which information is useful in a training session where participants have to learn 'how to measure total alkalinity'.*

1. Go through the text, individually
2. Mark **knowledge**, **skills** and **attitude** parts
3. Note essential and **not** so essential parts
4. Check ideas with others
5. How would you deliver the training ?
6. Note results on exercise sheets (next pages)

Exercise 2: *module production* (page 1/2)

- 1 Complete the objective for your training session. (This page, no. 4)
 - 2 Note the results of the text analysis under references. (This page, no 9)
 - 3 Describe how you would deliver this training session in terms of trainer activities.
(See session plan on next page)
 - 4 If you have time left, complete other items on this page
-

- 1. MODULE TITLE** : *How to measure total alkalinity*
- 2. TARGET GROUP** :
- 3. DURATION** :
- 4. OBJECTIVE** : After the training session,%. of the participants will be able to
.....
and to,
using a and a,
in a total time of seconds / minutes, with an accuracy of
- 5. CONTENTS IN KEY WORDS** :
- 6. TRAINING METHODS** :
- 7. TRAINING TOOLS** :
- 8. HANDOUTS** :
- 9. TEXT REFERENCES** : Page paragraph (knowledge / skills / attitudes)
Page paragraph (knowledge / skills / attitudes)
Page paragraph (knowledge / skills / attitudes)
Page paragraph (knowledge / skills / attitudes)
Page paragraph (knowledge / skills / attitudes)
Page paragraph (knowledge / skills / attitudes)

Exercise 2: *module production* (page 2/2)

Session plan

Session activities & timing

Training tools & visuals

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	

Curriculum and module development check list

When you have your draft training course and modules ready, check it against the following guidelines and critical questions:

1. Are objectives clearly stated, operational and split in knowledge, skills, attitudes?
2. Which level of the class should we train: top, middle or bottom?
3. What factors are important in deciding the sequence of subjects taught? What is the proper sequence ?
4. Should you send out readings in advance to participants ?
5. What can you do to improve the rhythm of the course and the emotional climate among the participants ?
6. Is there enough practical work to do ? Is there a proper balance between (morning) lectures and exercise/case studies/discussions (in the afternoon) ?
7. Don't have lectures in the afternoon. Instead, schedule exercises/workshops or small group work.
8. Debrief exercise/case-work results the next morning and discuss issues.
9. Schedule 'hard' work (perhaps exercises) in the first week of a course to set a tone of serious business.
10. In new subjects or techniques, start with a simple exercise and build up the participants' confidence with progressively more complicated skills.
11. Build as much participation as possible into all sessions.
12. Use a mix of different methods to change the pace.
13. After several days of a 'hard' subjects, provide several sessions of lighter subjects.
14. Don't schedule two hard sessions on the same day with different topics and long home work requirements.
15. Should all exercises be scheduled during classroom time or is home work required?

16. Should multipurpose cases/examples/field trips be used throughout the entire course or just towards the end ?
17. Will you try to simulate the real life situation of participants? How?
18. How about free time for digesting and relaxation?
19. Should you apply pre-tests for distributed materials or organise (simulated) pilot training sessions ?
20. Should you attempt more self-directed learning ?
21. Should you include (more) tests to measure whether skills are really mastered ?
22. How important is it to develop an analytical approach and critical thinking? How is this developed during the course?
23. Should you ask for more written essays or presentations by the participants to demonstrate understanding?

Training evaluation

What

1. Did participants benefit ?
2. Could the trainers do better ?
3. Are the materials useful ?
4. What about the logistics ?

How

1. Observe the participants during training
2. Use evaluation forms in your handout. Adapt as needed.
3. Take corrective actions.

Training evaluation form

Course or session title: Date: ... / ... / 19..

1 Contents and job relevance

Which job related knowledge, skills or attitudes did you expect to improve during this course?

- 1
- 2
- 3

Did this course meet your personal training objectives and expectations?

- Yes, absolutely
- Yes, except for
- No, because

Which specific tasks in your job do you expect to improve after attending this course?

- Especially
- I doubt whether I will apply newly acquired knowledge on because.....
- I doubt whether I will apply newly acquired skills in because

*What is your overall rating of the course **contents and their relevance** in your job as (circle one figure):*

Excellent		Good		Medium		Poor		Bad	
10	9	8	7	6	5	4	3	2	1

2 Trainers

Please comment in key words on the trainers who made a positive impression on you:

- Name: Strong points:,,
- Name: Strong points:,,
- Name: Strong points:,,

Please comment in key words on trainers who could improve their performance:

- Name: Weak points:,,
- Name: Weak points:,,
- Name: Weak points:,,

*What is your overall rating of the **trainers** in this training course (circle one figure)*

Excellent		Good		Medium		Poor		Bad	
10	9	8	7	6	5	4	3	2	1

3 Materials

Please comment on the materials (transparencies, handouts, text) provided to you:

- They are good, because
-
- They are fine, but I suggest to improve
-
- They are disappointing, because
-

What is your overall rating of the **materials** used in this course (circle one figure)

Excellent		Good		Medium		Poor		Bad	
10	9	8	7	6	5	4	3	2	1

4 Logistics

Please comment on the logistics and course organisation:

- All arrangements were fine
- I suggest the organisers to pay more attention to
-
- Disappointing, because
-

What is your overall rating of the logistics / management of this training course (circle one figure)

Excellent		Good		Medium		Poor		Bad	
10	9	8	7	6	5	4	3	2	1

5 General

Would you recommend this training skills course to your colleagues ?

- Yes, because
- No, because

What improvements would you recommend for courses like this ?

- 1
- 2
- 3

What is your overall rating of this training course (circle one figure)

Excellent		Good		Medium		Poor		Bad	
10	9	8	7	6	5	4	3	2	1

6 *Main text*

Contents

1. Introduction
2. Need Assessment
3. Preparing to train: the 5 Ws
4. Training objectives
5. Training development in 10 steps
6. Module production

1 Introduction

Each day of our life brings new learning which stimulates the mind. This process may or may not be systematic. Systematic acquisition of knowledge, skills or attitude is *training*. The sole objective of any training is to improve our performance or capabilities.

Can any type of training improve performance? Or: does the quality of training really matter?

To answer these vital questions, we must consider the difficulties in producing sound and effective training programs. These difficulties can be:

- Few organizations would admit that they can survive without training, yet some act as though they could.
- Everyone knows what training is, yet management, unions and workers often interpret training in light of their own job conditions.
- Training is going on all the time, but often in a haphazard way.
- Training does not work without time, budget and logistical provisions, yet those responsible often lack one or more of such requirements
- Training should take place at all staff levels, but is often confined to the lowest (or highest) levels.
- Training can help everyone to do a better job, yet those selected are often afraid to participate.
- Training is does not make sense without clearly defined objectives, yet many training courses lead to confusion in this respect.

2 Needs Assessment.

Training needs assessment starts in the organisation and includes task and personal analyses.

Organizational analysis begins with an examination of the short and long term goals of the organization, as well as trends that are likely to affect these goals. Often, this analysis requires that upper-level management examine their own expectations concerning their training programs. Training designed to produce proficient engineering personnel must be structured differently from programs to train engineers who are capable of moving up the cooperate ladder to managerial positions.

When organizational analysis is ignored, planning difficulties are always around. Many organisations have spent considerable sums of money retraining personnel because the original training programs and decisions on performance capabilities were based on a system that soon became obsolete. Not all performance problems in an organisation have a trainable solution. Changes in the organisation itself, re-postings, better management practices could be better solutions, and if this is the case, training has nothing to offer.

Tasks analysis is the second part of the needs assessment and includes a careful analysis of the job to be performed by the trainees upon completion of the training program. This analysis is usually divided into several separate procedures.

The first step is a job description in behavioral terms. It is not a description of the worker. The narrative specifies the individuals duties and the special conditions under which the job is performed.

As second step, all job tasks are further specified in such a way that the skills, knowledge, and attitudes required to perform the job will become clear. Thus, a brief description of the job of an airline reservation clerk might indicate that the clerk makes and confirms reservations, determines seat availability, and so on. The task specification would consist of a complete list of tasks providing information about what the worker does, how the worker does it, to whom or what, and why. In addition to developing on how the analysis will be used, data might be collected about how important each task is or how frequently it is performed, etc.

The organization and task analyses provide a full picture of the tasks and the organizational setting in which they occur. The next step is, for a trainer, to review these task and specify the knowledge, skills, and abilities (KSA) components required for a jobholder to perform such tasks. This translation of tasks in KSA components makes it possible to specify personal needs in a trainable elements.

Personal analysis This analysis is concerned with the question how well a specific employee is, at present, carrying out the tasks which make up his job. As such, this component of the needs assessment is very much related to the determination of the knowledge, skills and abilities necessary to perform the tasks. However, here the emphasis is

not on determining which KSA are necessary but to find out to what extent a jobholder matches with the ideal KSA level.

Personal training needs is easy in case of newly recruited staff or in case absolutely new working practices are introduced. In such cases, all KSA aspects are a training need and should be covered in staff training. In other cases, training designers will have to be more differentiated in their personal TNA to avoid over- and under training.

3 Preparing to train: the 5 Ws

Development of a successful training programme begins by asking ourselves the following five questions:

- Why?** Ask why you are training at all. Why are the objectives important for the trainees?
- What?** Ask what you can put over in the available time. At what intellectual level will you pitch your teaching? What should trainees think or do at the end of the course? What training methods / aids will you need?
- Who?** Analyse the trainee group: Age? Nationality? Level? Language abilities? Prior experience? Expectations? Mind set?
- When?** Ask whether the timing of the course is good for you and for them. Period of year? Weekdays/weekends? Morning? Afternoon? Evening?
- Where?** Ask about and prepare for environment. Building? Room? Layout? Seating patterns? Interruptions? Temperature? Noise?

The above questions are to be addressed to the four components of training i.e. trainee, trainer, materials and logistics. It is noted that both the beneficiary organisation would ask these questions for their own staff and training institutes which are keen to deliver their training may do the same. It will be clear, that training recipients and designated training providers should maintain close consultations on the training design to avoid courses which do not match with training needs.

4 Training objectives

In developing training materials, the first step is to define the intent or the educational objectives of the training. To be useful objectives, they must be defined in specific terms:

1. The objective of any training programme is to change behavior and must be expressed in performance terms.
2. What is the minimum acceptable level of performance?
3. How will you test the achievements of that level of performance?
4. What performance standards will you accept? How well should a student be able to perform the new behavior?
5. Is the newly acquired behavior defined in terms that are measurable, observable?
6. Under what conditions is the new behavior expected to occur?
7. Learning objectives may be phrased in one of the three training domains: knowledge, skills or attitudes.

A common mistake is to write objectives in terms of activities to be undertaken or subjects to be studied rather than in job performance terms. For example: *the objective of this training session is to explain the maintenance of the rain gauge*, tells more about what the trainer would do than what the trainees are able to do. To reach clear-cut conclusions, goals must be reduced to clear-cut, specific objectives that are tied down to concrete behavior making the intended training result visible when it is attained.

Behaviorally defined objectives have the following characteristics:

1. They graphically describe where the student will stand or what he will be doing at time he has achieved the objective;
2. They include any qualifying conditions or restrictions that must exist for the terminal behaviors to be acceptable;
3. They state the criteria of an acceptable performance: item limits, productivity levels, quality control standards, minimum essentials, thresholds, etc.

Objectives defined in behavioral terms use words open to fewer interpretations rather than many. The following list illustrates this difference:

Words open to many interpretations

to know
to understand
to really understand
to appreciate
to fully appreciate
to grasp the significance of
to enjoy
to believe
to trust

Words open to fewer interpretations

to write
to recite
to identify
to differentiate
to solve
to construct
to list
to compare
to contrast

Many education goals are too global or vague to be objectively evaluated. Well meant but intangible statements need to be reduced to specific observable behaviors. Typically, goals are stated as broad generalizations, reflecting the attitudes and values that give direction to human enterprises. Until they are reduced to more tangible objectives, they tend to be short and vague. Objectives, in contrast, are concrete and specific, spelling out the details in observable behaviors or end products. They tend to be longer and more definitive. The discipline is to tie down the problem to visible behavior and explicit outcomes before related training sessions are designed. This accomplishes two things: first, it establishes whether or not the problem can be objectively defined and, second, it ensures results that can be objectively evaluated.

One general goal may require several objectives to make all of its implications explicit. In this sense, the relationship between goal and objective is analogous to that between whole and part. How many objectives are necessary before the goal has been circumscribed is an empirical question. Ask yourself: "Is there anything else I expect of individuals who have attained this goal?" Goal attainment may also be defined in terms of a certain proportion of possible objectives ("*Any three out of five*") or as a probability statement ("*If a student meets all of these objectives there is a 90 percent probability he will be able to prepare an annual budget*").

5 Training development in 10 steps

Step 1 Analyses needs of the trainees organisation

The first step is to define the broad needs of the organisation and then to focus on specific requirements for training. A need is something that must be accomplished for the organization to achieve its purpose. Not all needs can or need to be met by training. For example, if a country needs loan applications to submit to the World Bank, the organisation could meet this need either by hiring consultants to write a proposal or by training local personnel to do the job.

Step 2 Specify job performance required to meet organizations expectations

The purpose of this step is to define what an individual should do on the job after training to accomplish the needs of the organisation. The definition should specify quality and quantity of performance. Each statement should start with a verb and describe behaviors and actions are required to accomplish the needs of the organisation.

Step 3 Define existing capabilities of training participants and define selection criteria

Estimate which needs could be met by training. Define the course contents to meet the needs of a “median” participant, but include material which would hopefully be of use to those participants above or below the median. Establish selection criteria which keep participants close to the median so that the material is relevant to each participant. In this step you should define the minimum selection criteria for future participants of a particular course.

Step 4 Select programme objectives and define specific learning objectives per module

We can classify different types and levels of learning. The specific types of learning are (1) knowledge (access to information); (2) skills, the ability to use the knowledge; and (3) attitudes, the disposition towards knowledge, skills and the working environment.

We should keep these types and levels of learning in mind when selecting programme objectives and defining objectives for individual training modules. In selecting programme objectives, we should consider several factors. First we should look at the needs of the organisation to determine whether the organisation is an operating, planning or financing organisation. Then we should consider the needs of the participants, given their qualifications and the degree of homogeneity or heterogeneity of the group as defined in step 2.

Next, we should take into account certain constraints on our ability to accomplish programme objectives; e.g., course length, lecturing staff, facilities and funds, type of course which can be tight, information transfer, technical skills and social skills, Finally, there is the need for flexibility to change if the actual participants change.

Step 5 Build curriculum

The curriculum is the course calendar and it specifies the content and sequences of subject matter. When we are establishing the subjects and topics to be covered in the course, we consider several factors: time requirements which are dependent upon the desired intensity of

the topic, the lecturers schedules which constrain the phasing and sequencing of the lectures; level of sophistication of the participants, their willingness to learn and their constraints (private, professional) to be away from the usual living environment.

Curriculum developers are very keen to facilitate the “internationalization” process. Participants should be given an opportunity for subconscious thought over item to relate the new material to past experience. Thus, the instruction should allow some time between sessions on a certain topic but not so much that the participants lose their train of thought.

A second factor to consider is “boredom potential”. Some instructions favor splitting a subject up (rather than giving several consecutive sessions on the topic) in order to relieve boredom while providing time for internationalization. Others argue that it is easier for the mind to grasp one subject fully before moving on to another. If the instructor does split to topic up, he should intersperse lighter subjects rather than another heavy topic.

Another factor to take into account is the workload. Long case studies should be interspersed with topics needing less preparation. Assignment could be planned to provide balance. In addition to the spacing and planning question, the instructor should be aware of the participants’ shock at beginning a course with a case discussion rather than the more familiar lecture format. Some orientation to the case method with no threatening material would be quite useful.

Finally, one should consider the participants cultural shock, jet lag and adjustment to a new environment. As part of the socialization process, the participants need to know about their fellow participants. To accomplish this, it would be desirable to have several smaller group meetings to let the participants become acquainted in small primary groups.

Another aspect of the socialization process is to encourage participants to form relationship across regional or cultural lines. It is quite natural for participants to gather in cultural sub-groups, so in the early weeks, it would be useful to encourage other groupings. This can be done in assignment of participants of groups. Another approach might be to have lecturers select random groups to go to lunch in the cafeteria.

Step 6 Select methods and materials

Don’t change your methods simply for the sake of change. Don’t choose a method solely because you feel it will create enthusiasm in the group. Keep in mind that your goal is to keep the learning process going. Before selecting a method, ask yourself the following questions:

Will it produce the result I am seeking? Impart knowledge? Increase skill? Improve attitudes? Hold group interest? Improve morale? Solve a problem we must solve? Create group enthusiasm? Create group involvement? Have I considered the advantages and disadvantages of the method? Am I qualified to use the method, or do I have qualified people available? Will the selected methods and materials simply entertain but fail to educate? Does the group have a sufficiently high threshold knowledge to participate? Do we have the equipment necessary to apply the method? Will it cost more, or take more time, than the results it can produce will be worth? Will this methods lead to embarrassment? What combination of

methods will be best for this subject and this group? Do I simply use a method because I like it?

Step 7 Obtain instructional resource (physical, budget, personnel, time)

For a new programme, this step is difficult. Before either the physical resources or the personnel can be obtained, the budget must be secured. Then, it is necessary to find adequate facilities and qualified staff. Checklists will help to avoid forgetting things. Please update such checklists distributed to you under the HP (TIS, ToT) in line with your own experiences.

Step 8 Conduct training

This is the implementation phase. If we have selected our methods wisely and prepared our teaching materials carefully, then the trainer who is familiar with both the methods and the materials can begin the training. New materials should be tested before they are used in class.

Step 9 Evaluation

The purpose of training evaluation is to compare the accomplishments of each phase of the programme with its objectives. Revisions in the programme can then be made if they are necessary at each of the preceding eight steps. Feedback can come formally and informally at various stages of the course. During training sessions a trainer who has a good rapport with the participants will encourage feedback. During exercises, direct observation of task performance is possible. Informal feedback channels, during coffee breaks, at meals, parties and social events, could encourage those participant who might otherwise hesitate to voice their opinions, criticisms, suggestions, approval etc. More formal evaluation such as questionnaires are useful when evaluations results are to be discussed with others.

Step 10 Take corrective action

Evaluation results remain descriptive and rather useless if they do not lead to improvements. Such corrective actions can take place in training materials, trainers performance, logistics and trainee selection, as appropriate. Analysis of evaluation results and choosing the right type of follow-up action can be as easy as employing a better cook (*“The food was terrible and most participants got sick”*) or as difficult as finding an answer to remark *“Everything I learned was interesting, but I see no possibilities to apply newly acquired skills in practice”*.

6 Module production

A module is not the same as *lecture notes*. A training module contains two parts i.e. the trainer's notes and the lecture notes (or main text). To develop a module, the following steps are suggested.

Step 1 Compile the main text, technical documentation or lecture notes available for a topic. The introduction should be short and precise. There should be a flow in the message to be conveyed through the main body of the text. The summary should not be a repetition of the main text. Always check and recheck the grammar, spelling, readability and formatting. Use text processing software such as MSWord to make this job easy.

Step 2 Complete the module's *profile/information sheet*. It includes information on:

1. Title of the module
2. Target group
3. Language to be used
4. Duration/ time required to train on the subject
5. Crisp and clear objectives on the subject
6. Key concepts or words which would define the subject
7. Training methods to be used during the session
8. Training aids required
9. List of handouts for the trainees
10. Reference materials for trainers and/or trainees to expand their knowledge or skills on the subject.

Step 3 Define the *module context*. A module could be a stand alone module or one out of a series of modules. It should also state the entry requirements for the trainee undergoing the said module. These requirements could refer to educational standards, expected job experience and other modules.

Step 4 Specify the duration / time a trainer is going to need to complete a session. In the *session plan* you list what you do, as a trainer. These activities descriptions begin with an active verb and include a reference to training media, method of working etc.

Step 5 Describe how you will evaluate a module during or after delivery. Often, you would use to-the-point questions asked in a quiz style or as topics for discussion. In skills training, you would observe how well trainees have mastered new skills by observing their practices.

Step 6 Prepare the masters for all *overhead sheets* which will be used by the trainer. The overhead sheets should be precise, clear and contain key words rather than sentences. Remember that the sheets not only help the audience to maintain an overview of what you are saying and doing. They also help you to avoid losing track in the session plan.

Step 7 Prepare masters for the *handouts*. Often, you would use the overhead sheets for this purpose. Perhaps a copy of the main text, but do not expect the trainees to read this. Always consider to prepare special handouts which provide a summary of working procedures, guidelines etc.

While assembling the module, the sequence to be followed is:

1. Cover page (indicates names of agencies involved, title and module code no.)
2. Table of contents
3. Profile sheet
4. Session plan
5. Suggested evaluation
6. List of overhead sheets
7. Overhead sheet masters
8. (Additional) handouts
9. Table of contents for the main text
10. Main text.