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1 — The Design Process

Introduction to the Design Process

As designers, you are drawn from a pool of subject matter experts. You are asked to develop competencies necessary for the design of effective learning products.

Following a rational and structured process to design will enable you to complete your design assignments within the expected timeframes and ensure that you succeed in your design tasks.

This section presents the background information required by designers on the following:

- *Systems Approach for Learning*
- *Steps in Designing Training/Learning Products*
- *Role of the Designer*

Systems Approach for Learning

The design of learning products is part of a systematic approach to learning. As designers you are asked to plan and develop these learning materials following a rational approach, no matter what type of learning product you are considering.

Following a systematic approach to learning

- *results in effective and efficient learning*
- *ensures that learners are given the learning opportunities needed*
- *contributes to the development of a learning organization*

The following table presents the five phases and a brief description of each phase.

PHASES	DESCRIPTION
Analyzing Learning/Training Needs	identifies priority learning/training needs for one or more members of the workforce, and the training objectives to meet these needs. The identified needs are stated as accurately and as realistically as possible in terms of performance requirements.
Designing Learning/Training Product	selects and develops learning activities and materials to achieve the performance level specified.
Pilot Testing the Learning/Training Product	tests the content and methodology of the learning products. It identifies the changes required to ensure that the learning activities are both effective and efficient in meeting the desired objectives.
Conducting the Implementation	provides the training/learning as defined, developed and pilot tested as it is required.
Evaluating the Learning/Training	determines whether learning activities as defined and developed, have met the needs of the individuals/organization effectively. It evaluates the results of training in terms of work performance and payoffs.

Steps in Designing Training/Learning Products

You can divide the design activity into four main steps.

1. Conduct the Preliminary Research
2. Prepare the Project Proposal for the Design Project
3. Prepare the Design Plan/ Course Training Plan
4. Develop the Materials for Learner and the Facilitator

In each of the steps you will be required to carry out the responsibilities associated with the role of designer.

Role of the Designer

Designers are expected to be able to select and develop the learning activities and materials to achieve a specified level of performance in the workplace.

The design tasks you are to perform require specific personal qualities and skills.

In fact, you can think of this role as similar to that of an engineer or an architect in that it requires detailed analysis and planning before the actual building of the learning product.

Designers must

- analyze problems, tasks, and learning needs
- formulate training/learning objectives
- select and organize content
- select methods and learning activities
- produce learning products for learners and facilitators

Performing these tasks requires designers to be

- creative
- analytical
- tolerant of ambiguity
- patient
- willing to take risks
- able to manage detail
- able to do research
- willing to follow standards for quality design
- willing to follow the writing process of planning, drafting and revising
- willing to accept feedback
- able to work in a team environment

As a designer, you will have a chance to assess your success in demonstrating these qualities throughout your design activity.

2 — Learning Basics

Importance of Learning for Design

The learning process is important to the planning of effective learning materials, since it is through the use of these materials that learners are expected to develop their competencies to improve performance in the workplace.

As designers you are challenged to set up all learning activities to ensure that the learning objectives are achieved in the most effective and efficient manner possible.

One key to doing this is to keep the definition of learning in mind as you work.

Definition of Learning

Learning is the process of change in which new knowledge, skill(s) or attitude(s) are acquired. Evidence that learning has occurred is demonstrated by a change in behaviour.

Where a learner has been involved in a situation where he/she is learning to drive a car, the evidence that learning has occurred might include the following:

- the learner can explain the rules of the road
- the learner can drive the car safely according to the law
- the learner expresses acceptance of the laws

These three changes in behaviour are evidence that the learning experience has affected the knowledge, the skills and the attitude of the learner.

As you plan and develop materials for learning activities, recall the definition of learning to help you maintain your focus on the learning required. Ideally, you should be able to provide the learners with opportunities to demonstrate what they have learned.

Meeting Learner Needs

Well designed learning materials take into account the requirements for successful learning experiences. Consider these learner needs as the basis for the planning of learning activities.

You can meet these needs if you plan for both the specific needs of individuals and those of adult learners more generally.

THE INDIVIDUAL LEARNER

Individual learners coming to a learning situation are unique. As a result of their life experiences, they have developed their own personalities, specific areas of expertise, individual preferences for operating, and identifiable beliefs and values. This ***baggage*** affects their learning style and thus their success in learning.

You can think of ***learning style*** as the way an individual learns best. A particular learning experience may be more valuable to one learner than to another. For example, one learner might be best able to acquire knowledge on a new topic by listening to a lecture, while others might prefer to read a paper, watch a film or participate in a discussion.

You can respond to the specific needs of individuals by providing ***a variety of learning activities and materials***. This will allow learners to use the materials in ways that are best suited to them.

THE ADULT LEARNER

Although individual learners in any learning situation have specific needs, there are some general truths about adults as learners for your consideration.

The research conducted on adults as learners has produced four significant findings:

1. Adults are capable of self-direction.
2. Adults bring experience to the learning situation.
3. Adults need to see the benefits of what they are learning.
4. Adults learn best if they have the opportunity to apply what they are learning.

5. Adults are more motivated by internal factors than external factors.

You can respond to the specific needs of adult learners by planning learning activities and materials which respect these findings. This will allow learners to succeed as they use the materials.

Guidelines for Effective Design

What we know about learning can be translated into these general guidelines for design:

1. ***Provide content in a work context***
2. ***Divide the material to be learned into digestible chunks***
3. ***Allow learners to practice what they are learning***
4. ***Ensure clarity in the message.***
5. ***Provide stimulation to the learner***

Implementing the Guidelines

In order to implement the guidelines for design, consider the suggestions presented in the tables which follow:

Component	Explanation	Suggestions for Implementation
Context	Learners learn better if they can see learning is relevant to their needs	provide the learning /training objective point out benefits of learning point out relationship between performance and learning
Digestible Chunks	learners learn better if material is divided into manageable amounts and is presented at their level of readiness learners require time to assimilate new information	identify readiness level build on what learners know divide material into logical points sequence and group the points use frameworks limit to "need to know" items
Practice	Learners require practice to develop skill and increase retention	use problem solving, hands on activities use questions, exercises or simulation of activities in the workplace ensure practice is accompanied by feedback

Component	Explanation	Suggestions for Implementation
Clarity	Learners learn better if the message is meaningful	provide the learning /training objective use appropriate level of language introduce, develop and summarize use examples use visuals/graphics provide structured learning activities use questions to verify understanding
Stimulation	learners learn better if they are aroused and alert/required to think for themselves	present objectives and outlines ensure learner participation vary learning activity use examples use visuals/graphics point out benefits

Using the Learning Ladder Model

You can think of a ladder as a model to illustrate the requirements for quality design products.

The ladder itself symbolizes the step by step process of the required learning.

The ladder is set in a firm foundation of the results of a needs analysis since it is from the learner needs that you identify what is required from the learning.

The learning /training objective is situated at the top of the ladder since that is the goal of the learners as they ascend the ladder.

On either side of the ladder are the components of quality design and instruction, those that will guide the learners to successfully climb the ladder to achieve the learning/training objective. These are the components of context, digestible chunks, practise, clarity, and stimulation.

The Learning Ladder Model is useful in summarizing the conditions required for successful learning experiences.

3 — Preliminary Activities

Introduction to the Preliminary Activities

Before you can actually begin the design of learning materials, you should have the answers to a number of critical questions. In addition, you will want to plan the design project itself so that you can be sure to have the necessary resources to complete the design.

The two preliminary activities presented in this section include

- *Conducting Preliminary Research*
- *Preparing the Project Proposal*

Conducting Preliminary Research

In order to design, you require the answers to the following questions:

1. Why is this material being designed?
2. What are the priority learning/training needs of the target population?
3. What is the learning/training objective?
4. How does the work environment affect the performance on the job?
5. What material already exists?

The answers to these questions are found by completing the ***Preliminary Research.*** These research activities include the following:

- *reviewing the findings of the Training Needs Analysis*
- *reviewing the current learning materials*

Training needs analysis findings

Training Needs Analysis is a process which results in the formulation of training objectives based on identified training needs.

For any situation where training is determined to be the solution to a performance problem, a training needs analysis team gathers data on the target population, the nature of the work environment and the performance of the job tasks.

From the data gathered, the training needs analysis team

- describes the characteristics of the target population
- describes the characteristics of the work environment
- identifies the job tasks where there is a discrepancy in performance and identifies the knowledge and skills associated with those tasks requiring training

The training needs analysis team then analyzes their data to

- **identify the priority training needs of the specific target population**
- **recommend a strategy for addressing those needs.**

The procedures for conducting training needs analysis activities may vary, depending on the **resources** available, the **time** involved and the **circumstances** for design.

Review the current learning materials

Once you have a clear idea of the training needs of the target population, you are ready to examine existing materials, both internal and external to the organization.

This examination may identify material which could be useful to you in the process of design. In some cases, there may be materials which could be used in their entirety; in others, you may find only little of use. Very often, designers find that existing materials prove a valuable resource and thus are an important timesaver.

Preparing the Project Proposal

Design projects are generally managed through the use of a project management system which ensures that all parties are clear on what is expected of them and that a commitment of the necessary resources is made.

For details on the preparation of a design project proposal, consult your project manager/leader and the sample project management forms.

As designers you will use the project proposal and the activity planning schedule to guide you through the production of the deliverables required for successful project completion.

4 — Writing Objectives

What is an Objective?

An objective is a clear and precise description of an intended result; it must be observable and measurable.

e.g., to take the necessary steps to handle reptiles safety

Applied to learning/training in a performance-oriented context, an objective is defined as the ***description of exactly what a learner will be able to do upon completion of the learning/training activity.***

This type of objective describes an improvement, change or new behaviour in performance, in terms of skills, and this new behaviour at the end of the training period can be observed and evaluated.

Why write objectives?

Objectives identify the learning goal for the learner and for the designer

They clearly set out what is expected from a specific learning segment and allow the learners to assess their success.

In addition, by providing the designers with a clear statement of the performance expected objectives serve to guide the content and types of learning and activities for a particular learning product.

How do you write an objective?

To write an objective, include the following three components:

- the ***performance statement***, which describes the carrying out of the desired task;
- the ***conditions*** inherent in carrying out the desired task;
- the ***standard,*** which stipulates the minimum level of performance, in terms of quality and quantity, required for carrying out the task.

Objectives describe performance. The learning/training objective is the performance expected in the learning/training situation. Ideally, it should match as closely as possible the performance expected in the workplace.

For each of the three components, follow the structure as described in the table below.

Component	Description	Example
Performance Statement	the precise description of a task to be performed at the end of the training period; in terms of skills; using a verb which describes an observable, measurable action; addressed to the learners.	At the end of the session you will be able to write a memorandum.
Conditions	circumstances under which the performance occurs; resources available/not available organizational conditions assistance/without assistance	using a PC and reference notes alone with assistance
Standard	the criteria for assessing success; the quality/accuracy/quantity standards conformity to legislation, regulations, policy, procedures etc.	according to the communication guidelines in bilingual format with no spelling errors

Types of Objectives

Designers write an objective for each course/module and for the lessons/sessions/units that make up each learning product.

Both types of objectives are written to focus the learner on the performance to be achieved by the end of the learning activity.

5 — Selecting Instructional Methods and Practice Activities

What is an instructional method?

Materials designers have the task of selecting the best combination of learning activities to ensure that all learners will have the opportunity to achieve the training objective. They are, in fact selecting the ***instructional methods.***

Facilitators are responsible for implementing the learning activities as designed and adapting the instruction to the needs of learners. They are tasked with supporting the learning process according to the *instructional methods* as described in the lesson plan.

The specific selection of instructional methods is related to the overall learning mode, that is the mode for the delivery of the session. The most common ***learning modes*** used for adult learners are facilitator-led courses, self study courses, computer based training and on-the-job training and coaching.

Naturally, the overall learning modes are determined to meet the particular needs of the learning situation (i.e., the nature of the content, the learning and work environments, the characteristics of the learner target populations, the subject matter experts available to act as facilitators, and the available resources for design and implementation).

In all learning modes, a number of teaching techniques can be employed. It is these techniques that are often referred to as **teaching** or **instructional methods**.

These instructional methods are the means by which new material is presented to the learner; they are also the means by which learners are given the opportunity to practice using their new skills and knowledge.

Since Environment Canada facilitators must be able to support training using a variety of instructional methods, it is important to examine them in more detail.

INSTRUCTIONAL METHODS USED

Some examples of instructional methods commonly used include the following:

- lecture
- demonstration / walkthrough
- question and answer
- discussion
- brainstorming
- practical exercises
- problem solving / discovery
- role play
- case study / simulation

These methods, effectively supported with examples, analogies, and visual support (i.e., charts, diagrams, exhibits, text explanations) provide the means for facilitators to guide the learners to achieve specific training objectives.

LEVEL OF LEARNER INVOLVEMENT

Each of the methods requires learners to interact with the lesson content in some way. The greater the learner involvement, the more effective the method is in supporting the learning process.

In anticipating the effective implementation of instructional methods, it is useful to consider what is expected of the learner in terms of the level of involvement.

How do I select the instructional method?

The instructional methods prescribed in the lesson plan are the result of designers considering the following factors:

- nature of content to be learned
- current level of expertise of learners
- time available
- training environment
- design resources
- concern for variety / individual learning styles
- level of learner involvement

In deciding upon the instructional method, the most important question, of course, is "Will the method allow the learners to succeed in learning?"

The result of wise selection is a course plan which outlines the combination of methods which meet the needs of the learners, taking into account the available resources. The methods are generally tested through a pilot session so that facilitators can be confident of their effectiveness and efficiency.

The responsibility of the designer is to provide instructions for the facilitator. Course plans are to incorporate a variety of instructional methods and designers must assess which of the methods suits a particular situation.

The following chart summarizes the conditions and criteria for effective use of the most common instructional methods.

METHOD	CONDITIONS	CRITERIA
Lecture/ Reading	learner lacks expertise/ learner has expertise time is short concepts are easy	short as possible; logical sequence; appropriate framework; appropriate visual support followed up with application
Demonstration	skills involved complex task	showing accompanied by clear explanation of logically sequenced steps; short as possible; repetition as necessary; followed up with application
Question & Answer/ Discussion/ Brainstorming	learners have expertise content to be developed from expertise learners require stimulation / guidance in thinking	important points addressed; questions clear, concise, and at appropriate level of difficulty; clarify and reinforce answers
Practical Exercises/ Problem Solving/ Discovery/ Role Play/ Case Study/ Simulation	learners have knowledge/skill base; learners require stimulation; learners require practice and feedback; complex task; evaluate training	instructions clear and complete; feedback on performance provided; anticipate problem areas; coaching as required; follow up and summary included

6 — Preparing a Course/Module Design Plan

Purpose of the Design Plan

An important deliverable identified in your activity schedule of your project proposal is the blueprint for the learning product, the *Course/Module Design Plan.*

This plan records your decisions about the materials to be developed (much like the blueprint for a house). Your plan outlines the content and presents the learning/training objectives, the structure and the instructional methods for the whole product.

This plan allows you to present the *picture* of the design product to your client and to make the changes required before you begin the work of actually developing the materials.

Even more important, it provides the design team with guidance for the production of the learning materials as it clearly indicates to them what they need to know in order to proceed with the development.

The importance of preparing this plan cannot be overemphasized, as it is the means to effective and efficient design.

Structure of a Course/Module Design Plan

A Course/Module Design Plan is divided into two sections;

COURSE/MODULE OVERVIEW

The first section is the ***Course/Module Overview*** This section describes the product as a whole under four main headings. The table below presents guidance for drafting this section.

Heading	Subheading	Contents
Introduction		
	Intent	text stating context/problem/need to be addressed by product
	Target population	text stating the intended audience for the product
	Duration	the estimated time required for learning
	Expected benefits	text listing benefits to learner/team and to organization
	Approach/method	text describing the training approach, the main instructional methods and the materials to be produced
	Loading	Maximum, minimum and optimum numbers per group, if applicable
	Estimated resources	text, listing resources required for implementing the product (Human- facilitators/coaches; Physical - equipment, documents, supplies, rooms etc.)
Course/Module Objective		one objective for each course /module expressed in terms of performance, conditions and standards;
Evaluation of Achievement of Course/Module Objective		text describing the means for evaluating the achievement of the objective, usually a description of the final application exercise
Timetable		present time breakdown

MODULE OUTLINES

The second section of the document is the ***Module Outlines***. This section contains a detailed summary for each of the segments of the learning product. The table below will guide you to produce these outlines.

Heading	Contents
Title	provide a meaningful title for the segment
Lesson/Session/Unit Objective	one objective expressed in terms of performance, conditions and standards
Evaluation of Achievement of Objective	description of the means of evaluating the achievement of the lesson/session/unit objective, usually the final application exercise
Content/Teaching Points	detail the content to the third level in point form i.e., topic, sub topic, and relevant content points
Instructional Methods	description of the type of learning activity for each of the items listed in the previous row (includes the notes for the development of visual support and details of questions and exercises)
Time	the breakdown of the time estimated for completing each learning activity

Use of Reference Materials

You are encouraged to refer to the other topics contained in this document as you prepare the description of the learning activities for the module outlines.

Ideally, you will also have access to samples of materials for review and to the services of a design consultant to assist you in preparing the best plan possible.

Reviewing the Design Plan

In preparing a course/module design plan, you are making all the decisions for the development of the learning/training product. In order to ensure that your design plan will be effective for the learners, you should review the plan with someone experienced in product design, if possible.

Generally, the design team will do a review of the plan as a whole and make changes to the first draft, adding more details to ensure that the materials developers have clear direction.

The **Design Checklists document** is a tool that has been created to support the review of deliverables at various stages of production. It identifies specific design criteria in the form of statements describing various aspects of the product.

Refer to the criteria statements for the preparation of the Design Plan to help you assess whether all the necessary information is present in your document.

7 — Developing the Learning Materials

Preparation for Development

To develop the materials as outlined in the Course/Module Design Plan, you will need first to confirm that you understand what the designer of the plan intended.

First, read the *Course Overview* section and clarify any details necessary for your understanding regarding the intent of the product. Then read each lesson/session/unit/outline to see how the product is designed to enable the learners to achieve the learning/training objective.

Once you have a clear picture of the final product in your mind, you are ready to start the development of the materials.

There are six main steps for developing quality products.

Steps in Development

1. Confirm types of documents to be produced.

Most learning products include materials for the learners and for the facilitators/coaches. Designers determine the content and format of these materials on the basis of the following:

- the nature of the subject matter
- the approach/delivery mode
- the instructional methods identified

- the existing documentation, i.e, reference manuals, text materials, guides
- the identified conventions, standards and specifications
- the post-learning requirements for reference material

Generally, Environment Canada learning products consist of paper materials to be used both during the learning and after as reference material on the job. The documents you are to produce provide the necessary information on content and methods in support of the learning process.

Learner Materials

The Learner Materials may be packaged in one or more documents. These documents contain the necessary

- Reference Materials/Handouts - summary notes/explanations
- Materials/Handouts for the Learning Activities- presentation of objectives, content outlines, text explanations, questions, practice exercises and suggested solutions
- Final Application Exercises- exercises which learners complete to demonstrate achievement of the objectives for the lessons/sessions/ units and the course/module and the suggested solutions
- Evaluation Questionnaire - questionnaire designed to gather learner reaction on the effectiveness of materials

Facilitator Materials

These materials provide guidance to the resource persons working to support the learners. They too may be packaged in one or more documents. They contain :

- Preliminary Information - the general instructions on what is required of them for preparation activity and a general description of their role and responsibilities
- Module Unit - the specific directions for carrying out their responsibilities in facilitating the learning
- Visual Support- the prepared transparencies, flipcharts, on line materials required for delivery
- Product Evaluation Questionnaire - questionnaire to gather feedback from facilitator on usefulness of package

2. Confirm formats of the documents.

Work with the design team to agree upon the format for each document, ensuring that you are following the *Design Guideline for Learning Materials* from the Training and Learning Division.

3. Prepare a detailed outline for one module unit.

Using the selected module unit outline from the Design Plan, the relevant case files and work related documents, add the necessary notes to produce your personal detailed outline so that you can easily produce your first draft.

This step is critical in that it ensures you will have made all the decisions related to the content and the process before writing. Failing to complete this step always results in using more time in the actual drafting of the product.

4. Draft your document based on your detailed outline.

At this point, you can concentrate on how to express the ideas.

Since you will have already considered all the options and have a clear picture of what the final product should be, the drafting should be just a matter of expressing on paper/on line those decisions already made.

5. Review your draft / Arrange for reviewer.

The *Design checklists document* is a tool that has been created to assist designers and reviewers of design. It can be used at all stages of materials development.

Assess your draft against the specific design criteria statements for a module unit or encourage your reviewer to use the tool to provide you with feedback.

For technical materials, you may have agreed to submit the design for a technical review to ensure that the technical information is accurate and consistent with policy and procedures.

6. Revise the draft based on findings from review

Incorporate the feedback from the results of the review, your own self assessment and that of others. This step is satisfying as you can see how the improvements you are making contribute to a product of quality.

Use of Reference Materials

As you develop each type of learning activity, you are encouraged to refer to the other topics contained in this document.

Ideally, you will have access to sample materials too which you can use as models for your product.

Finalizing the Learning Product

Before national distribution, you are encouraged to try out the product with a representative sample of the population.

Ideally, you will arrange for a formal pilot of the learning product. If this is not possible, you still will need to validate its effectiveness with some learners so that you can identify any changes that should be made before widespread use of the product.

In some situations, it may even be possible to get this feedback as you are developing the materials.

Whatever means you use to identify the required changes, plan to spend the time necessary to complete them so that you are certain learners have what they need to achieve learning success.

8 — Developing Materials for Explanation/Lecture

Introduction

Providing explanations/lecture is an instructional method often selected if time is short, if the group is large or if the learners lack experience and material. It is also selected in situations where a brief review of material is desirable.

The success of this instructional method is dependent upon the ability of the writer/speaker to communicate the message so that the learners understand what was intended. The method assumes subject mastery, careful planning, and excellent writing/presentation skills. Effective explanations are ***concise, coherent, simple, correct*** and ***considerate of the learner.***

Designers are asked to organize the material to be explained so that the learners are able to understand the message easily. They must also adopt a writing style that meets the criteria for effective explanations.

Guidelines for Organizing the Message

There are a number of techniques available to designers to promote success. These organizing techniques include the following:

1. Present The Content In A Framework

A framework aids readers/listeners in relating to the content. It gives them a point of reference to which they can link new information.

For example, a framework for introducing a new procedure might be "problem" and "solution". This would allow readers/listeners to see how the new procedure could eliminate the difficulty they were currently experiencing. The framework serves to help learners organize the new information within a context.

Some possible frameworks are:

- past, present, future
- problem, solution
- known, unknown
- cause, effect
- whole, part
- general to specific

2. Relate To Previous Experience, Skills Or Knowledge

By building on what learners know, designers can assist facilitators in providing the links necessary to integrate new information.

For example, the introduction of new law relating to non-resident tax might include a summary of those aspects which remain followed by the specific changes.

The reference to what is known allows learners to orient themselves to the learning situation and to see the connection between what they have done in the past and what they will be expected to be able to do in the future.

3. Structure with Introduction, Development and Conclusion

Each part of the structure plays an important role in ensuring the message is conveyed as intended.

- The **introduction** prepares the learner for what is to come. It announces the topic and relates it to the learners' needs.
- In the **development** of ideas, learners are guided in their thinking from one point to the next through clear, concise text using appropriate examples, links and repetition.
- The **conclusion** synthesizes the information, reminding the learners of the important points presented.

4. Stimulate And Maintain Interest

The designer can address the level of motivation of learners by:

- using visual support (graphics, charts etc.)
- introducing examples, mental pictures
- using a problem solving approach
- striving for coherence, conciseness, simplicity, correctness and consideration

Coherence

In well written explanations, the ideas flow logically from one paragraph to the next, and similarly, within paragraphs. This characteristic, called ***coherence,*** helps the reader understand the message. Following the suggestions for organizing the message as presented above, will contribute to the coherence of your text.

For reference and self access materials, you will divide your content into paragraphs, each with one main idea. This respects the learners' need to digest content in chunks.

In addition to your organizing your message and dividing the content into paragraphs with main ideas, you can improve its coherence by using ***transition words*** to link the ideas.

Some examples of the linking or transition words are presented in the table below.

PURPOSE	TRANSITIONAL WORDS AND PHRASES
to show time relationships or to add details	first, second, etc. then, next, finally, lastly presently, again, soon, shortly, after before, in fact, further, furthermore, moreover
To show purpose	in order to, so that, for this reason, with a view to
To summarize	in brief, to conclude, in summary, finally
To show contrast	but, however, on the other hand, although, in spite of the one/the other, and yet, on the contrary, still
To point backward	from this, this showed, the latter, as previously stated formerly, with this in mind, these data suggest
To show similarity	similarly, in the same way, like, just as, equally, for example, too, for instance
To show result	thus, consequently, since, as a result, therefore, hence, in this way
To show concession	indeed, in fact, naturally, besides, as a matter of principle, of course, after all
To introduce a general idea	generally, often, in general certain, different, various, several XXX

Conciseness

Conciseness can be obtained through good word choice and simple sentence structure. Paragraphs should contain no more than 75 words. Sentences should not be longer than 25 words. Use active voice whenever possible.

Simplicity

Simplicity is achieved through using everyday language and concrete examples and images. Avoid jargon and inflated words. (e.g., Use *now* rather than *at the present time* and *use* rather than *utilize.)*

Use technical terms learners will need in their work environment, but define and explain them the first time they appear in the text. Simplify complex concepts using comparisons, diagrams flow charts and graphics.

Correctness

Correctness refers to precise vocabulary and grammatical accuracy. Use the exact words to express your meaning. Correct spelling, grammar and punctuation promote easy reading. They also inspire confidence in the content. Proof read and edit to ensure correctness.

Consideration

Use a friendly style to show consideration for the learner. Speak directly to the learner using ***you***. Picture the audience as someone you know and talk to them. Express ideas positively to try to achieve a friendlier tone.

9 — Using Visual Support

Introduction

Visuals are an effective means of supporting learning content. **Projected visuals** such as overhead transparencies and computer slide-shows and **non-projected visuals** such as flipcharts, chalkboards and whiteboards are those commonly used in Environment Canada.

Rationale For Use Of Visuals

Visuals serve as a **support to the learning process.** Well used, they can

- capture, focus, and maintain interest
- highlight a significant concept
- clarify meaning
- guide thinking
- speed up learning
- increase retention
- encourage participation
- add humour

Visuals also add to the **credibility of the facilitator** in that they add an element of professionalism to the presentation.

Effect on Retention

While all the points relating to the learning process are important, the most convincing reason for using visual support is the effect it has on the retention of the learner.

Studies on retention confirm what we instinctively feel to be true about the value of visuals.

Planning For Use Of Visuals

Designers must plan the use of visual support. The steps suggested for doing this include the following:

1. Review the lesson objective and teaching points to determine which points should be supported with a visual.
   e.g.,
   - when a point should be emphasized
   - when a point is complex and difficult to explain
   - when a point suggests a mental image
   - when a verbal description is inadequate

2. Clarify the purpose of the visual.
   Is the intent to
   - capture, focus, and maintain interest
   - highlight a significant concept
   - clarify meaning
   - guide thinking
   - speed up learning
   - increase retention
   - encourage participation
   - add humour?

3. Select the appropriate visual considering the following:
   - availability of materials and equipment
   - cost effectiveness
   - size of group
   - characteristics of room
   - frequency of use
   - variety desired
   - effect on learner

4. Design the visual according to criteria for good design.

   This last step of designing the visual assumes knowledge of the standards for effective design. Accepting the fact that individual preferences play a part in this design, there are recommended guidelines to assist designers and facilitators.

Principles Of Design For Visuals

Adhering to the standards for producing good visuals will result in a product which is effective in helping learners learn. All visuals/ training aids should be designed according to the principles of **visibility, simplicity, and clarity.**

Visibility

Visibility simply refers to whether the visual can be seen. The visibility of a visual is affected by the format, the size of the image and lettering, and the colour combinations used.

Simplicity

Simplicity refers to how complicated the visual is. The simplicity is affected by the amount and detail of the information presented.

Clarity

Clarity refers to how intelligible the message on the visual is. Clarity is affected by the arrangement of information, the use of graphics and the use of colour.

Criteria For Visuals Design

The criteria which follow are those suggested as guidelines for Environment Canada. Both projected and non-projected visuals are commonly found in designed materials.

Two aspects important to both types of visuals are colour and the use of graphic illustrations.

Colour In Visuals

Colour is an aspect important to both projected and non-projected visuals. Colour increases the clarity of a message and facilitates the learning process.

The following statements summarize the findings from the research done on the use of colour:

- Colour improves communication.
- Colour attracts and sells.
- The effectiveness of colour increases as people become accustomed to it.
- Colour differentiates between elements.
- Colour highlights vital information.
- Colour shows relationships and makes comparisons easier.
- Colour condenses information, making it possible to present more information without confusion.
- Colour attracts and holds interest.
- Colour adds prestige and reflects credit on its originator.
- Colour appeals to emotions.

Guidelines for Use of Colour

For the effective use of colour, designers and facilitators should follow these guidelines:

1. Use colour for a specific purpose.
2. Be sparing with the number of colours used. (3 to 4 maximum)
3. Convey meaning with intensity of colour.

   e.g.,

   - solid areas are more important than patterned areas
   - continuous lines are more important than broken lines
   - heavy lettering and numbers are more important than light
4. Be consistent in the meaning of the variation of colour.
5. Provide contrast to clearly define comparisons and relationships.
6. Identify priority information with colour by writing, circling, boxing, underlining or highlighting.
7. Avoid continuous text in red and green; select black or blue.
8. Choose background colours that are appropriate to the medium and that achieve the desired contrast. (e.g., black on clear, yellow on blue for transparencies; dark colours for computer generated graphics.)

Graphic Illustrations

Illustrations are valuable to both projected and non-projected visuals because they, like colour, focus attention on what is important. They can be used to clarify understanding, capture interest and add humour.

To be effective, the number of graphic illustrations should be limited; too frequent use decreases the impact and can even serve as a distractor.

Projected Visuals

Projected visuals include all those using projection onto a screen or monitor. They are prepared using a software program, plotters or lettering equipment, or by hand with transparency markers.

Design of Projected Visuals

The list below outlines the criteria for design.

1. Projected size a minimum of 2.5 centimeters (1 inch) high for every 9 meters (30 feet) of viewing distance
2. Upper case lettering for titles and emphasis; lower case lettering for text
3. Material on screen to have margins (transparencies to have minimum of 1 centimeter (3/8 inch))
4. Material positioned horizontally if possible
5. Material confined to top two-thirds of screen
6. Limit of 6-8 words per line and 6-8 lines per screen
7. Limit of 8-12 visuals per instruction hour
8. Colour used appropriately
9. Graphics used appropriately
10. Overlay screens to build message

Delivery Using Projected Visuals

Just as important as the design of the visual is the manner in which the visual equipment is used. To be effective as a support to the learning process, the visuals should be presented with ease. Designers can assist facilitators by providing directions for delivery using the visuals so that the use of the visual is not a distraction to the learners.

Some guidelines that designers should be aware of include the following.

Guidelines For Delivery Using Projected Visuals

1. Strip tease with cardboard or paper if you are using transparencies with information you want revealed a little at a time.
2. Add information as you present, using learner expertise whenever possible.
3. Provide copies of screens for reinforcement if required.
4. Allow time for viewing and for taking notes; ensure lighting is available for note-taking.

Non-Projected Visuals

Non-projected visuals include the traditional flipchart, chalkboard/ whiteboard, and any other handouts, documents or equipment used to support instruction. These are prepared during the design phase or by the facilitator as part of lesson preparation.

Design of Non-Projected Visuals

Keeping in mind the principles of visibility, simplicity and clarity, the following criteria have been identified for the design of visuals on **flipchart/chalkboard/whiteboard.**

1. Use the largest lettering possible for the material to be presented.

   (Minimum height of 1 inch)
2. Use 10-12 lines as a maximum.
3. Include key points only.
4. Use clear, bold, uncrowded lettering.
5. Print or write using lower case for continuous text.
6. Avoid slanted lettering.
7. Manage "white space".
8. Use colour appropriately.
9. Use graphics appropriately.

Delivery Using Non-Projected Visuals

Designers must keep in mind both the non-projected visuals prepared ahead and "real time" support (created during the presentation of the lesson). Some guidelines on the delivery aspect the designers should consider include the following:

Guidelines For Delivery Using Non-Projected Visuals

1. Consider covering prepared material until needed.
2. Make notes in light pencil for yourself on flipcharts.
3. Tab flipchart pages for easy reference.
4. Post or leave on board, material to be used for future reference. (Prepare tape in advance.)
5. Where appropriate, use two flipcharts or a combination of board and flipchart in tandem.
6. Allow sufficient time for study and note-taking.

Reference Materials/Handouts Design and Delivery

These materials may be prepared for use in facilitator-led sessions as well as for self directed learning. In fact, the materials are often distributed all at once in a *Learner Guide* or they may be distributed individually as required.

The design of these materials is largely determined by the content to be presented. In design, consider the following:

1. Adequate use of white space to avoid crowding
2. Opportunity for learners to highlight important information or record own notes
3. Text that is relevant, clear and concise
4. Use of headings and subheadings
5. Consistent lettering and numbering

The instructions for use of handouts are generally provided in the lesson plan. Some general guidelines are listed below.

Guidelines For Using Reference Materials/Handouts

1. Distribute/make reference to the document at the appropriate time.
2. Clearly identify by page/numbering reference/heading the information to be read. Write numbers on board or flipchart.
3. Wait until learners have found the correct page before speaking.
4. Always provide a purpose for reading to focus learner attention on what is important.
5. Provide adequate time for reading; don't talk to group while they are trying to read.
6. Indicate the amount of time for reading if the text to be read is more than a page.
7. Ask learners to report their findings and build on their answers.

10 — Developing Question and Answer Materials

The Value of Using Question and Answer

An important aspect of designing any learning session is to review the materials for opportunities to use ***question and answer*** as an instructional method. Question and answer is suited to situations where learners have some expertise or where learners can find the information through the reading of work-related documents or other reference materials. It is useful in combination with other instructional methods.

Questioning is a valuable technique because it supports the learning process through stimulating learner involvement and by confirming learning.

Stimulates learner involvement

Through the use of questions, you can

- *encourage and guide thinking*
- *promote discussion*
- *arouse learner interest and encourage learner participation*
- *provide variety and a change of pace*
- *offer learners with expertise an opportunity to share their experience and opinions.*

Confirms learning

Through questioning you can

- *determine the knowledge level of the learners*
- *assess the success of the learning experience and identify problem areas.*

Factors Affecting Success Of Questioning

The success in using questioning is affected by the **intended use** for the questions, the **quality** of the questions themselves and the **process** followed in asking them.

Intended Use

Questions can be used in introducing a point, developing a point and in concluding a point.

- *Use questions in the introduction and development of a teaching point in situations where learners have expertise or have access to reading material where they can find the information required to respond. As new concepts are presented, use questions to allow learners to apply what they are learning immediately.*
- *Use questions as a concluding activity to allow learners the chance to recall what was presented. Asking learners to summarize the important information reinforces significant points.*

This variety in the way questions can be used allows designers and facilitators scope to combine other instructional methods with questioning.

As designers prepare the Facilitator's Guide, they should examine the opportunities to use questions.

Criteria for Question Formulation

The following table presents the criteria for questions and suggestions for achieving success:

CRITERIA	*SUGGESTIONS*
clear, concise, correct	Word questions so that listeners can understand them easily. Ensure that they • *address only one point at a time* • *are free from unknown jargon* • *are as short as possible* • *are both technically and grammatically correct*
appropriate level of difficulty	Determine what the desired level of difficulty for the question is. Questions should require the learners to think; if answers are either too obvious or too difficult, learners may react negatively.
relevant	Ask only questions that are relevant to what the learners should focus on. Avoid insignificant details and questions that are off track.

Questioning Process

A third factor affecting the success of questioning is the process used to pose and respond to the response. Designers are to consider the following five step **APPLE** technique.

STEP	SUGGESTIONS
ASK	ask questions that are clear, concise and relevant; if you are working with more than one learner, address question to whole group
PAUSE	pause to allow listeners time to interpret the question and to formulate an answer (3 to 10 seconds)
PICK	if you are working with more than one learner, pick someone who indicates that he/she wants to respond; direct the question to a specific individual by name
LISTEN	listen to the response with the appropriate acknowledgment (eye contact, facial expression, or other minimal encouragers)
EVALUATE	evaluate the response and respond appropriately. All responses require acknowledgment.

Discussion Learning Activities

In the list of instructional methods, discussion appears in the grouping with question and answer and brainstorming. In fact, the three are instructional methods which expect learners to be involved in the presentation of content and are thus closely related to each other.

Question and Answer, as described previously, can be used as an instructional method in combination with other instructional methods.

Discussion

Question and answer becomes ***discussion*** when learners are encouraged to generate and consider a number of alternatives in response to a particular situation. The situations appropriate to the use of discussion include the following:

- group problem sharing
- sharing of knowledge/experience
- evaluation of solutions to a problem

Designers identify discussion to involve learners in the presentation of the content. Even though facilitators may be subject matter experts, in implementing discussion as a learning activity, their role is truly one of facilitation.

Designers provide the guidelines for the discussion leader on the following:

1. Being well prepared with up to date knowledge on the subject.
2. Identifying the desired outcome of the discussion.
3. Opening the discussion with appropriate question(s).
4. Encouraging contributions from willing learners, drawing less willing ones in as possible.
5. Refraining from TELLING. Avoiding "being the expert" and imposing views in favour of coordinating the communication process.
6. Acknowledging all responses.
7. Clarifying understanding of messages expressed.
8. Keeping discussion on topic, gently reminding learners of the outcome expected.
9. Encouraging critical listening with respect for differing opinions.
10. Recording main points/conclusions on visual support to track results.
11. Summarizing at appropriate times and moving discussion on to next point as required.

Brainstorming

If specific restrictions are placed on the rules for handling discussion, the instructional method can become what is commonly identified as ***brainstorming***. Brainstorming is used to generate as many ideas or options as possible within a specified period of time. Brainstorming is ideal for situations when you want to encourage creative thinking and avoid being trapped or limited to a few options.

Designers find that brainstorming is effective for questions where there is more than one appropriate solution.

Two activities

Brainstorming is divided into two stages. The first consists of encouraging responses to a problem or a question and recording those responses without any evaluation or discussion on the merits of the answers. The second stage involves clarification of the ideas presented and evaluation of them against predetermined criteria.

Designers guide facilitators to follow these steps for successful brainstorming activity.

1. Explain the method to learners.
2. Present the problem/question.
3. Set the time limit for the first activity i.e., the generation of ideas.
4. Record all responses allowing for brief clarification of the idea without any comment on the value of the idea.
5. Classify/organize responses according to specified criteria required for acceptance.
6. Relate the information to the problem/question.

11 — Developing Practice Exercises/Tests

Practice Exercises/Tests and Learning

In designing learning materials, the designer is striving to ensure that the training will be effective for all learners. One important point to consider is the impact of practice activities, the exercises and tests, on the learning process.

Practice is essential to the success of learning in that it provide learners with the opportunity to apply new knowledge and skills; this application activity results in increased retention, skill development and confidence.

These practice activities can also serve as a vehicle to assess level of skills and knowledge and performance improvement. Learners and facilitators are able to identify the strengths and weaknesses of performance either before, during or after learning activities. Practice exercises/tests (also called performance checks) are designed both to reinforce and evaluate learning.

Individual Vs Group Exercises

Learners may be asked to work individually or in small groups to complete a specific task. The designer may wish to provide a variety of options to facilitators.

Having variety in conducting exercises is effective in stimulating learner thinking and in meeting the specific learning styles. The options include:

- working alone
- working in pairs
- working in small groups
- working in plenary

Types of Practice Activities

Good design includes a variety of practice activity types which focus on the application of knowledge and/or skills related to the content.

Some of the more common types include:

1. **Practice Questions**

Learners are asked to complete short answer questions, respond to true/false statements, answer multiple choice questions, match items in lists, arrange items in order, perform calculations etc.

2. **Problem Solving**

These exercises present a problem for solution. They may involve the use of mathematical or technical skills, or relate to the use of processes or procedures.

3. **Case Study/Situation Analysis**

A situation/case is presented to the learners as realistically as possible. Learners are asked to apply knowledge and skills to analyze and propose a solution or a plan of action.

4. **Simulation**

Learners are asked to perform all or part of the real task as would be expected in the workplace.

5. **Role Playing**

Learners are given an opportunity to react to a situation by taking on the role of an individual in a specific environment.

Designing Effective Exercises/ Tests

In order for practice exercises/tests to be effective, learners must

- see the relevance of the exercise
- understand what is expected of them
- complete the assigned activity
- receive feedback on performance

These requirements clearly set out what is expected of the designs. Designers will want to make sure that the facilitators are able to carry out the responsibility of administering/conducting the activity associated with the exercise so that the learners' needs are met.

The designer guides the facilitators to follow these steps:

1. Provide clear directions and verify that learners understand what is to be done and the time available for the activity.
2. Relate the exercise to the teaching points and provide the rationale for its completion.
3. Monitor the exercise completion and intervene appropriately.
4. Follow up the exercise completion with feedback on performance and a summary of the critical teaching points.

Examples of Exercise/Test Types

This section presents examples of the more common exercise/test types. For each type, there is a description and some guidelines for construction

True/False (Alternate Response)

Description

Each item consists of a statement that the learners are asked to mark true or false. Sometimes, in a second part, they are asked to correct the statement to make it true; this is the correction-type. A variance of the correction-type test is a text presented with specific errors inserted which are to be corrected.

Guidelines on Construction

- Use statements which are true or false at all times: this type of test can easily contain ambiguities if one is not careful.
- Avoid negative statements.
- Balance the number of true and false statements (40 to 60%).
- Make the statements about equal in length.

- Avoid setting a pattern for the answers.

  Example:

  Indicate whether the following statement is True (T) or False (F).

  - The Rio Apaporis Caiman is a crocodilian listed in Appendix II.

  Answer: The statement is false. This animal is listed in Appendix 1.

Multiple-Choice

Description

In this type of test, several possible answers are given for each statement or question, and the learners are asked to select the correct answers from among the suggestions. The incorrect answers are called distracters. Learners may be asked to find the one right answer, the one wrong answer, or all the right answers, or to place several statements in a specific order.

Guidelines for Construction

- Make sure that the initial statement, the stem, presents a definite problem and is complete in itself; the reader should be able to understand its meaning without reading the suggested answer.
- All of the alternatives are grammatically consistent with the stem.
- To compensate for the guessing factor, there should always be 3 or more suggested answers; more than 6 is not good; 4 or 5 is the ideal number (giving a 25% or 20% chance of guessing).
- As distracters, use common errors observed in previous lessons or courses, widespread but erroneous beliefs, answers which are true in themselves but foreign to the question, or answers which are too general or too restricted for the requirements of the question or problem.
- Use distracters which attract attention and require some thought.
- When using the alternatives "all of the above" or "none of the above, "make them coincide from time to time with the right answers; however, use these alternatives sparingly.
- Provide answers which are about equal in length.
- Identify the alternatives with letters rather than with numbers, in order to avoid confusion with the numbers of the questions.

- List the alternatives in a column in order to set them apart from the initial stem.

  Example:

  Circle the letter which corresponds to the most appropriate answer to the following question.

  What permit do you need to import a live American crocodile (App. I) from the United States?

  a) An import permit and an export permit.

  b) An export permit.

  c) A certificate of origin.

  Answer: The correct answer is a.

Completion Of Statement

Description

This test presents statements from which one or more important terms have been left out; the learners are asked to complete the statements. The learners may be asked to do this from memory, or may be given lists of words or phrases from which to choose the appropriate answers.

Guidelines on Construction

- Make sure that the statement contains no ambiguity.
- The statement or phrase must remain intelligible despite its incompleteness.
- Avoid having the blanks occur at the beginning of the sentences.
- Make sure that the space provided for the answer is sufficient.
- All spaces should be equal in length.
- No more than 1-2 blanks per statement.

Example:

Enter the word(s) required to complete the following statement:

- The Canadian CITES permit exemptions do not apply to _____ animals.

(a) live

(b) dead

Answers: the correct answer is (a).

Rearrangement

Description

This test presents a series of statements in a haphazard order, and the learners are asked to organize them in a specific order. In addition, the learners may be required to select one or several orders.

Guidelines on Construction

- The statements or propositions should be homogeneous within each series.
- Indicate the type of order that is being sought: logical order, order of importance, order of execution, chronological order, etc.

Example:

Indicate the correct order of the steps by writing a number from 1 to 5 beside each item below.

What is the correct sequence of steps to load a software package onto a personal computer?

(a) put diskette in disk drive

(b) turn on computer

(c) press enter

(d) close disk drive door

(e) turn on screen

Answers: The correct answers are: a-3; b-2; c-5; d-4; e-1

Matching

Description

The learners are given a list of premises and a list of responses and are asked to match each combination. In multiple matching, there may be two or more sets of responses, and the learners are asked to match one item from each response set with each premise.

Guidelines on Construction

- All components should be equal in importance.
- Avoid overlong lists of components; use no more than 10.
- Avoid overlong statements in the answer cluster because this list must be scanned several times.

- Avoid giving hints in the answer cluster; it is a good idea to list the alternatives in a neutral manner, e.g., alphabetical order.
- Provide a larger number of alternatives than is required in order to prevent selection of answers by deduction.
- If applicable, make it clear when the same answer can be used twice.

Example:

Match the types of shipment on the left to the organization who sign a transit notice form on the right by inserting the appropriate letters in the spaces provided:

Type of Shipment	Who Notifies?
a) Export	1) Canadian Recycler / Disposer / Importer / Buyer
b) Import	2) Shipper / Generator / Receiver / Broker or Agent
c) Transit	3) Canadian Generator / Exporter / Seller

Answer: a - 3; b - 1; c - 2

Short Answer

Description

Direct, specific questions are asked, to which the learners supply short answers (words or phrases). This type of test measures mainly comprehension and memory. It also eliminates any possibility of guessing.

Guidelines on Construction

- Question should contain no ambiguity.
- They should be direct and precise.
- The answers required should really be brief: a word, a term, a number, a symbol, a short phrase at most.
- A specific space may be provided for the answer.

  Example:

  Look up **Inventions** in the Topical Index, noting the subtopics and any topics related to the subtopics.

  (a) What is the subtopic that is related to inventions?

  _____

  (b) What are the topics that are related to the subtopic?

  _____

  _____

  Answers: (a) royalties; (b) information returns, to non resident persons.

Essay-Type Questions (Free Response Type, In Writing)

Description

In the traditional essay-type test, learners are given a specific problem or question and must study the context and produce an extended written response. Answer will vary in form, style, pertinence, etc. There will always be a subjective element.

Guidelines on Construction

- Write the question(s) clearly and precisely; the learners must know what is expected.
- Give clear instruction: length of response (from one or two sentences to one or more pages), number of components to be dealt with, time allowed, scoring criteria, etc.

- Establish precise evaluation criteria: coherence, organization, structure, strength of argument, precision, quality of expression or of ideas, etc.

Exercises/Problem-Solving

Description

These may be specific exercises or problems relating to mathematical, accounting or technical skills, or to the use of processes or procedures.

Guidelines on Construction

- Use precise performance or completion criteria
- Allow enough time for each exercise or problem.

Situation Analysis

Description

A situation is presented which is as realistic as possible. The learners are asked to apply their knowledge and experience and find a solution. The learners are given enough information to select a number of acceptable solutions or take appropriate action.

Guidelines on Construction

- The situation provided for the learners should be as real and concrete as possible; this requires particularly painstaking preparation.
- The time allowed should be flexible, because the length of the test varies with the learners' ability to analyze and their knowledge and experience.
- Care should be given to the scoring or evaluation method, and in particular to the directives to the facilitator, because in most cases there is not just one right answer but rather a range of possible answers.

Case Study

Description

A case study is a detailed account of a situation or event which is given to the learners so that they can analyze it and propose a solution or a plan of action. Case studies are complex in nature, but are well adapted to the government context.

Real Task (Simulation)

Description

The learners are asked to perform all or part of one of their real tasks or projects in the office. This type of test is ideal.

Guidelines on Construction

- Good knowledge of the task to be performed and the level of performance considered standard in the work environment are necessary for construction.
- All the aspects of the task to be performed should be well defined, especially if the entire task cannot be performed, as is often the case.
- Allow enough time for completion.

Role Playing

Description

Role-playing give the learners an opportunity to become the persons in a situation or an event that is presented as realistically as possible, and to express themselves and take action as if the context was real.

- diversify the position of the correct answer and avoid establishing a pattern: e.g., true, true, false, false, true, true, false, false. and so on;
- write the questions so that it is always possible to justify only one right answer that is clearly better than the other;
- avoid negative statements when it is possible to use positive ones; shun double negatives.

Preparation Of Test Items

Preparing questions requires a great deal of care and attention.

Consider the following recommendations:

- Before writing the questions, one should ask:
    1. What type of information is to be requested?
    2. What knowledge or skill is to be measured?
    3. What behaviour, what tasks make it possible to confirm that the knowledge or the skill has been acquired?
- Write more questions than needed, so that a better selection can be made when finalizing the test.
- Keep the following principles in mind when making a selection:
    - the test should reflect the range of the behaviour or skills to be evaluated
    - the length of the test should be appropriate for the amount of time allowed;
    - the difficulty of the test as a whole should be commensurate with the objective to be achieved by the learners, the content taught to them, and their knowledge and experience.
- Organize the questions (for tests that contain more than one question); in general, consider the type of questions, the level of difficulty or complexity of the tasks, and the nature of the tasks or behaviour to be measured; it might be efficient to:
    - cluster same-type questions; this reduces the number of instructions required and makes the learner's task easier;
    - rank the clusters obtained from the simplest to the most complex.
    - Re-read the questions at a later date (or better still, ask colleagues to do this) to ensure their pertinence and technical accuracy.

Guidelines on Construction

- The selected context and roles should be well defined and delimited.
- Particular care should be given to the definition of the problem and the purpose of the test, to prevent it from degenerating into a simple conversation, or worse, reaching an impasse or the adoption of a defensive attitude.

Construction of a Measurement and Evaluation Instrument

Development Stages

Once the test type has been selected, it must be developed in three separate stages. These include:

1. preparation of test item
2. writing of directives for the administration and scoring of the test, and of instructions for learners
3. preparation of feedback (answers and appropriate rationale)

Guidelines For Test Designers

- have a thorough knowledge of the objectives and content of the program or course, the level of learning of the learners, and test construction methods;
- use a type of test of which the requirements and difficulties are known;
- avoid jargon or overly technical terms; use language that is accessible to all and that is common to the course and lessons;
- aim for simplicity, concision, and grammatical and semantic accuracy; avoid any kind of ambiguity;
- prepare questions which require mastery of the basic knowledge and skills rather than questions which cover details only;
- avoid questions dealing with opinions, personal feelings or controversial issues;
- avoid giving the learner a choice between several questions, unless special circumstances justify this;

Writing Of Directives And Instructions

The directives for administration and scoring and the instructions to learners should be clear and concise, but also comprehensive.

- Directives for administration should indicate:
  - the exact starting time of the test;
  - the amount of time allowed;
  - the equipment or materials required;
  - the information to be given to learners;
  - the test procedure;
  - other considerations, if applicable.
- Instructions to learners should indicate:
  - the total amount of time allowed;
  - the time allowed for each part or question;
  - the test procedure in general, or in detail, the procedure for answering, with examples if necessary; if some instructions cover a set of questions, place them before the set instead of repeating them for each section or question;
  - the method of scoring.
- Directives for scoring should indicate:
  - the procedure for scoring (marks, particularities, criteria);
  - the amount of time allowed for the plenary discussion, if applicable, and its role;
  - the major points to be emphasized or reinforced during the plenary or a possible feedback session.

Preparation Of Feedback

The learners should receive feedback on their performance. This feedback should include the correct answers and where applicable, a rationale for the answers.

Where the medium of instruction is CBT, the feedback will include wrong answer feedback so that learners can try to answer a second time.