Handbook on Instructional Design
for the
Academy of ICT Essentials for Government Leaders

Patricia Arinto

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FOR THE ACADEMY OF ICT ESSENTIALS FOR GOVERNMENT LEADERS

Introduction

This handbook is a companion text to the Academy of ICT Essentials for Government Leaders module series published by the UN Asian and Pacific Training Centre for Information and Communication Technology for Development (APCICT). The modules provide an overview of key themes and issues in ICT for development (ICTD). They are designed in such a way that they can be used for self-study by individual readers or as a resource in a training course or program. This handbook on instructional design is intended for resource persons and trainers who are tasked with developing and delivering such training courses or programs to ICT policymakers and implementers in their own countries. It is part of APCICT's efforts to enhance the capacity of regional and national training institutions in customizing, localizing, and delivering the *Academy* modules to take national needs and priorities into account. The handbook can be used by itself or alongside the short course on instructional design on the APCICT Virtual Academy (http://ava.unapcict.org/).

Objectives

The handbook aims to enable readers to design Academy training programs that are underpinned by effective and appropriate instructional design principles and strategies.

To achieve this main objective, the handbook shall:

1) Give an overview of instructional design concepts and approaches;
2) Discuss principles of adult learning that should be observed in the design and delivery of training workshops and sessions for adult learners;
3) Provide an overview of the instructional design process; and
4) Describe instructional design strategies and best practices.

Learning Outcomes

After going through this handbook, you should be able to:

1) Define instructional design concepts and describe some major approaches to instructional design;
2) Discuss the principles of adult learning that should be observed in the design and delivery of training workshops and sessions for adult learners in your country;
3) Describe the instructional design process and specific instructional design strategies and best practices; and

4) Design training sessions for ICT policymakers and implementers in your country that are underpinned by effective and appropriate instructional design principles and strategies.

About the Author

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1. INSTRUCTIONAL DESIGN CONCEPTS, APPROACHES, AND PRINCIPLES

1.1 What is Instructional Design?

Simply put, instructional design (ID) is the systematic process of planning and managing instruction to achieve effective learning.

It is undertaken during the development of training and educational programs and resources. For example, an instructional design process was undertaken for the development of the Academy of ICT Essentials for Government Leaders module series. This involved identifying the Academy's target audience (i.e. ICT policymakers and implementers in Asia Pacific), selecting the topics and sub-topics that should be covered by the eight modules, and deciding on how these should be presented in the modules in order that that target audience can learn about them in the most effective way possible.

In consideration of this initial analysis of how the Academy modules should be designed, module objectives were specified, the specific sections for each module were determined, case studies were selected for inclusion in each section, and discussion questions and learning activities were formulated to help readers integrate the information presented and apply it in their own contexts. This in a nutshell is the instructional design process undertaken by the Academy development team.

Because learning situations are dynamic, instructional design is an iterative process that is undertaken not once but repeatedly, for every learning situation, even when the materials to be used have themselves undergone an instructional design process. As Thiagi (2008) puts it, "Instructional design never comes to an end. It is always a process of continuous improvement."

In the case of the Academy modules, the need for continuing instructional design comes from the fact that while the modules are designed for self-study, they are also intended as materials for training programs in various countries in Asia Pacific. Thus, the Academy modules need to be customized and localized to suit specific national contexts. In customizing the modules for a national training program, the training team needs to plan who to include as training participants, what topics to cover and in what sequence, how long the training program should be, and how it should be conducted, among others. These are all aspects of instructional design.

1.2 Approaches to Instructional Design

Instructional design is often thought of as a purely procedural matter, like baking a cake perhaps or building a house. (*Can you think of a better analogy?*) And procedural activities are usually thought of as neutral, even intuitive. It has been said that instructional designers "rarely work according to theories" and that they "merely work intuitively" (Gros *et al.*, 1997: 49, quoted in Lisle, 1997).

In fact, however, how we plan and manage instruction is influenced by our beliefs about what learning is and how it happens. Different perspectives on learning will therefore result in different approaches to instructional design.

In general, there are said to be three theoretical perspectives on learning: behaviorism, cognitivism, and constructivism.

Behaviorism posits that learning can be fully understood in terms of environmental cues (stimuli) and results (responses) that are apparent in the learner's behavior. Effective instruction in the behaviorist sense is one where learners learn to respond to certain stimuli in appropriate ways through the teacher's use of a system of reinforcement. Behaviorists tend not to be concerned with how learners think, arguing that it is impossible to know what is taking place in a person's mind. Learning for them is a process not of thinking but of associating a stimulus with a certain response.

Cognitivism, which challenged the dominance of behaviorism in the 1960s, focuses on the "black box" of the human mind and seeks to understand what goes on inside that black box. To understand how people learn, cognitivists study mental processes such as thinking, memory, knowing, and problem-solving. In this paradigm, knowledge is seen as symbolic mental constructions (called schemata) and learning is defined as change in a learner's schemata. The change, which can be observed in the learner's behavior, occurs as the learner mentally processes information. Indeed, cognitivists view the learner as an information processor, like a computer. For them, learning occurs when a learner processes new information in working memory and then transfers it to long-term memory. (Driscoll, 2000)

Both of these theories subscribe to the idea that knowledge is something that exists independently of the learner; teaching or instruction is a process of transferring this external knowledge to learners; and learning is a process of receiving or acquiring this external knowledge.

In contrast, constructivists, or those who subscribe to constructivism, think of knowledge as something that is constructed by learners as they attempt to make sense of their experiences. Learning, according to this view, is an active process of constructing meaning based on experience. (Wilson, 1997) Learners "apply current understandings, note relevant elements in new learning experiences, judge the consistency of prior and emerging knowledge, and based on that judgement,… modify [their prior/existing/current] knowledge." (Hoover, 1996) Moreover, learning is a social process: it involves collaboration among learners and negotiations of meaning from multiple perspectives. (Wilson, 1997)

The constructivist view of learning has important implications for teaching, such as the following:

1) Teaching is not a matter of transmitting or transferring knowledge — since knowledge is not something "out there" or a "possession" of the teacher to be "given" to and "received" by the learner.

2) The teacher is not the "source" of knowledge (the "sage on the stage"), but a guide who provides students with opportunities to construct new knowledge.

3) If prior knowledge is a key element in learning, then teachers must find out what learners already know and provide learning environments that exploit inconsistencies between this prior/current knowledge and the new experiences, and lead to the formation of new understandings.

4) Teachers must design learning environments that stimulate active learning, requiring learners to build on or extend their current knowledge and skills (capabilities) as they try to solve the problem and interact with their peers.

Questions To Think About

What are your beliefs about how people learn? How have these beliefs influenced the way you behave as a learner, as well as the way you teach others, including through training sessions that you have conducted?

1.3 A Blended Approach to Instructional Design

While we can analyze the theoretical underpinnings of specific approaches to instructional design, instructional design in practice rarely draws from only one learning theory. Contemporary instructional design is eclectic, drawing from different learning theories and approaches in response to different learning contexts. Designing national training programs on ICT essentials for government leaders is a case in point.

Questions To Think About

The target audience of the Academy modules consists of ICT policymakers, government leaders, and ICT project implementers. What are the characteristics of this group of people in your country? How do you think do they learn best?

ICT policymakers, government leaders, and ICT project implementers, the target audience of the Academy modules, would fall under the broad classification of adult learners. How do adults learn? What are the characteristics of adults as learners?

In general, the following characteristics are true of adult learners:
- They have a great deal of prior learning especially in the area in which they work.
- They are more problem-oriented than theoretical.
- They value experience and learning from experience.

- They are accustomed to participatory and collaborative approaches.
- They are independent and self-directed.
- They need to have a sense of progress and achievement.

These characteristics imply the need for a blended approach to the design of training programs for adult learners. A training program for adults cannot be purely behavioral, or purely cognitive, or even purely constructivist. Such a training program needs to have clear and observable learning objectives (from behaviorism), help the participants process information (from cognitivism) and construct new understandings (from constructivism), and get them to apply concepts and principles in authentic or real-world contexts (also from constructivism). Such a training program needs to utilize a combination of strategies from different instructional approaches (e.g. interactive lectures, role playing, case work) to help the participants achieve the target learning outcomes.

According to Thiagi (2003), a training program for adult learners should observe the following "laws" or principles of adult learning:

1) *Law of relevance*: Effective learning should be relevant to the learner's life and work.
2) *Law of previous experience*: New learning should be linked to (and should build upon) the experiences of the learner.
3) *Law of self-direction*: There should be opportunities for self-directed learning.
4) *Law of active learning*: Active responding produces more effective learning than passive listening or reading.
5) *Law of alignment*: Training objectives, content, activities, and assessment techniques should be aligned to each other.
6) *Law of multiple criteria*: A variety of standards for learners to judge their learning experiences and accomplishments should be provided.

Other principles of effective instruction that we can add to this list are:

7) *Law of practice and feedback*: Learners master skills through repeated practice and relevant feedback.
8) *Law of individual differences*: Different people learn in different ways.
9) *Law of learning domains*: Different types of learning require different types of strategies.
10) *Law of response level*: Learners master skills and knowledge at the level at which they are required to respond during the learning process.

Instructional design strategies that are congruent with these principles are discussed in the next section.

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2. THE PRACTICE OF INSTRUCTIONAL DESIGN

2.1 Steps in the Instructional Design Process

There are six basic steps in instructional design:

1) Analyze your learners and the learning context.
2) Define your learning outcomes (knowledge-attitudes-skills).
3) Structure the learning content.
4) Select the learning materials or resources.
5) Design the learning activities.
6) Determine the modes of assessment.

In performing each step, an instructional designer seeks to answer the following basic questions:

1) Who are our learners? What do they already know and how do they learn best?
2) What do we want our learners to learn? Why?
3) How do we structure the learning to achieve our learning objectives?
4) What learning resources are appropriate, effective, and available?
5) What strategies will we use to ensure that effective learning takes place? What combination of activities will enable the learners to achieve the learning objectives?
6) How do we know whether the learners are learning/have learned what they are supposed to learn? How do we assess learning?

Although they are listed in sequence, each step in the instructional design process has implications not only for the steps that follow but also for previous steps. In doing one step, it is important to refer back not just to the immediately preceding step but even to the earliest steps in the process (see Figure 1). Also, while it is always adviseable to begin with analyzing the target learners, an instructional designer could work on the steps in any sequence. For example, the modes of assessment could be determined immediately after the learning outcomes have been set, or the two steps can be performed in tandem.
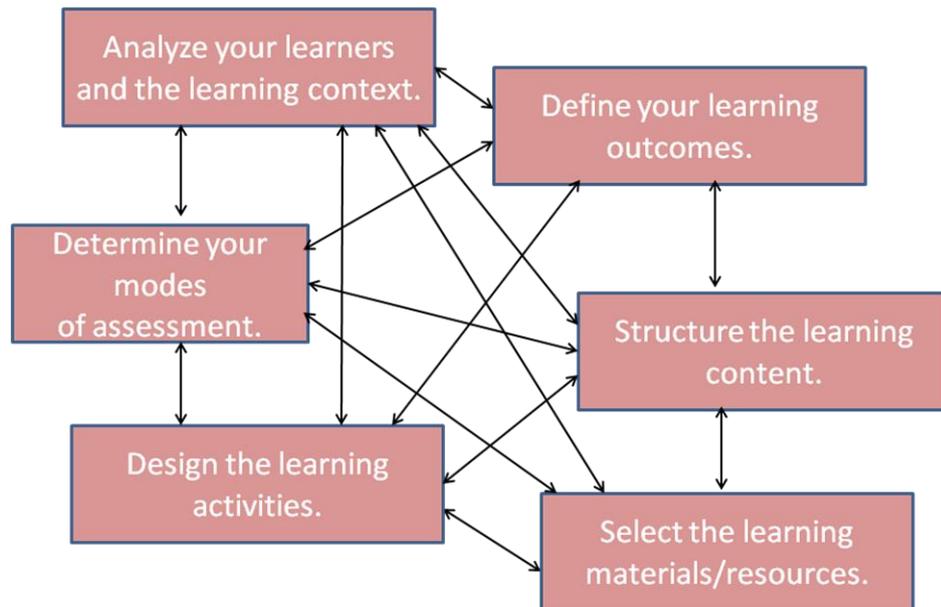
Figure 1. The instructional design process

Questions To Think About

Think of a training program you have designed. What steps did you take during the design process and in what sequence? Would you consider doing these steps in another sequence? If so, what would be the alternative sequence and why would you choose to adopt it?

2.2 Applying the Six Steps to Designing a National Academy Training Program

Step 1: Analyze your learners and the learning context.

In section 1 of this handbook we did a preliminary analysis of the Academy's target audience. We listed some of their general characteristics and we concluded that adult learning principles should be applied in the design of training programs for them.

A finer analysis of learners involves an assessment of their training needs. You can accomplish this through a quick survey of your training participants several weeks before the actual training dates so that you can use the results as basis for planning the training sessions. Such a survey could aim to acquire a profile of the target training participants in terms of their ICT skills and their familiarity with topics covered by the Academy of ICT Essentials for Government Leaders module series.

Box 1 includes an example of such a survey for a training session on Module 1 (The Linkage between ICTs and Development).

Box 1. Sample Training Needs Assessment Form

We would like to solicit your inputs on what topics should be included in the training program on ICTs and development that we are designing for you and your colleagues. Please fill in this short questionnaire. Your cooperation is much appreciated.

Your name: _____

Your agency/organization/institution: _____

Your designation: _____

1) Which of the following information and communication technologies do you use in your work? *Tick all that apply.*

__ email	__ computers
__ the Internet	__ CD-ROMs
__ telephone	__ mobile phone
__ fax machine	__ LCD projector
__ radio	__ television
__ printer	__ digital camera

2) Please review each topic in the list and indicate whether you are very familiar with it, slightly familiar with it, and not at all familiar with it.

Topic	Very familiar	Slightly familiar	Not at all familiar
The Millennium Development Goals			
Information and Communications Technologies (ICTs)			
The digital divide			
Convergence			
Telecentres			
ICT for development (ICT4D/ICTD)			
ICTs and poverty alleviation			
ICTs in education			
ICTs and health			
Telehealth			
ICTs and gender equality			
ICTs and natural resources management			
ICTs in disaster management			
e-government			
e-governance			
ICTD policymaking			
ICTD project management			

3) What specific questions do you have about the topics you are slightly familiar with and the topics you are not familiar with? *Please write your questions in the space below.*

The results of this short structured survey should enable you to plan the sequence of topics to be covered in your training program, how much time to allot to each topic, and what instructional strategy to adopt for each topic. You can also fine-tune your target learning outcomes on the basis of the participant survey results.

For example, if the majority of training participants surveyed says they are very familiar with ICTs and telecentres, you could decide not to have a separate session on these topics. Instead of a session describing the key features of ICTs and telecentres, you could go directly to providing an overview of the use of ICTs in achieving development goals.

If you are concerned that some participants are not as familiar with ICTs as others, you could design an activity where, instead of you presenting and describing the different ICTs, you could show examples of situations where ICTs are being used and ask the participants to identify the ICT that they see in each example and describe the benefit or advantage that it gives. This short activity allows you to help participants activate their prior knowledge about the topic and level off or ensure that everyone is on the same page with regard to this basic content before proceeding to the main topics on the training agenda.

If you have time, it would be best to do a comprehensive assessment of training needs in all of the topics covered by the Academy modules to allow you to plan the national Academy training program in a more holistic and programmatic way. This comprehensive assessment will require a lengthier, more detailed survey than the example given in Box 1. There is a risk that (some) respondents will not complete such a survey or only selectively answer the questions. This is where interviews with key informants, such as heads of government agencies involved in ICTD policymaking and planning, heads of training departments, and development workers, can be useful in probing survey results and identifying more precisely what aspects of certain topics need to be emphasized. For example, the Academy modules were designed according to the results of a comprehensive needs assessment survey involving over 20 countries in the region and consultations with government officials, members of the international development community, and

academics and educators, as well as in-depth research and analysis of the strengths and weaknesses of existing training materials

More generally, in terms of the adult learning principle discussed in section 1, a pre-training survey of target training participants helps you to observe the "law of relevance" and the "law of previous experience" in adult learning.

Something To Do 1

To help you plan your national Academy training program better, conduct a comprehensive training needs assessment involving local stakeholders, including a carefully selected sample of your target training participants.

Step 2: Define your learning outcomes.

Each of the Academy modules specifies its target learning outcomes. However, you will need to structure or organize these learning outcomes, and in some cases reformulate them, for the training program you are planning. For example, if you are planning only a three-hour training session for government officials, then not all of the learning outcomes listed for say, Module 1, can be met in that session.

Table 1 shows sample outcomes for different training plans on Module 1.

Table 1. Sample training outcomes for different training plans

Training Duration	Target Participants	Learning Outcomes for Module 1
1.5 hours	High government officials	For the participants to be able to explain the rationale for using ICTs to achieve development goals
3 hours	Mid-level policymakers	For the participants to be able to: 1. Explain the rationale for using ICTs to achieve development goals; and 2. Identify key factors to consider in designing and implementing ICT for development projects and programs.
1 day (6-7 hrs)	Government planners	For the participants to be able to: 1. Describe how ICTs can be used in poverty alleviation, education, health, and gender; and 2. Analyze key factors in the design and implementation of ICT for development projects and programs in these sectors.
3 days	Mixed group of policymakers and	For the participants to be able to: 1. Explain the rationale for using ICTs to

	project managers	achieve development goals;
		2. Describe how ICTs can be used in key sectors of development, in particular poverty alleviation, agriculture, education, health, gender, government and governance, and disaster and risk management;
		3. Discuss challenges in the effective application of ICTs for development; and
		4. Analyze key factors in the design and implementation of ICT for development projects and programs.

Note from Table 1 that learning outcomes are expressed using verbs that refer to observable or measurable learner behavior on the part of training participants. Such behavior signals or demonstrates that participants have achieved the target learning outcome.

In addition, in continuing professional development programs it is always good to set higher order thinking skills as learning outcomes. Benjamin Bloom's taxonomy of cognitive or thinking skills is useful in identifying such outcomes (Figure 2).
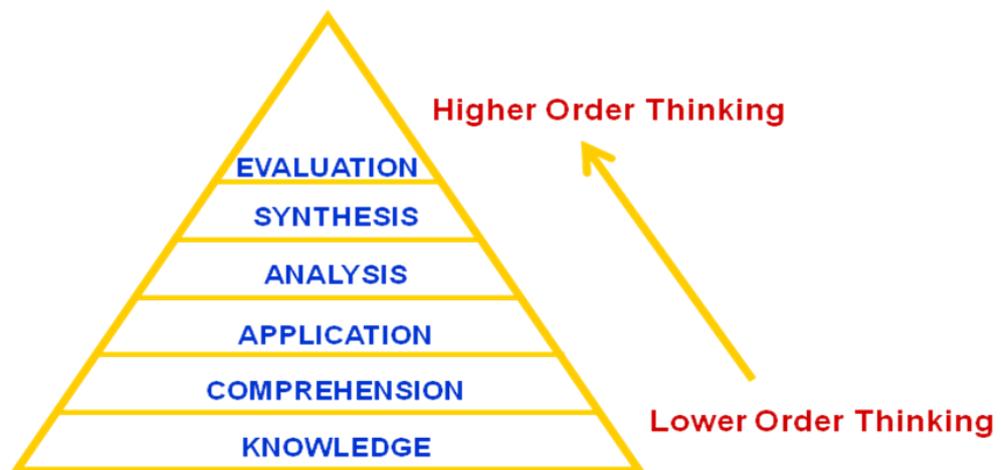

Figure 2. Bloom's taxonomy of cognitive skills

Test Yourself 1

Each of the levels of thinking skills in Bloom's taxonomy is defined below. Examples of learning outcomes are provided for each. Put the unclassified learning outcomes (in italics below) under the appropriate thinking skill.

rank	*enumerate*	*summarize*	*calculate*	*invent*
paraphrase	*experiment*	*define*	*modify*	*interpret*
discuss	*grade*	*discover*	*order*	*substitute*
connect	*conclude*	*test*	*formulate*	*arrange*
describe	*divide*	*compare*	*create*	*contrast*
relate	*compose*	*infer*	*design*	*illustrate*
recommend	*critique*	*justify*	*solve*	*make projections*

1. **Knowledge** = remembering/recalling information
   Learning outcomes: *enumerate*, _____, _____, _____

2. **Comprehension** = understanding information
   Learning outcomes: *restate*, _____, _____, _____,
   _____

3. **Application** = using what was learned in new situations
   Learning outcomes: *demonstrate*, _____, _____, _____,
   _____, _____, _____, _____

4. **Analysis** = breaking down information into its component parts
   Learning outcomes: *separate, classify, explain*, _____, _____,
   _____, _____, _____, _____, _____

5. **Synthesis** = combining elements, pieces or parts to form a whole or make a new pattern or structure
   Learning outcomes: *integrate, plan*, _____, _____, _____,
   _____, _____, _____, _____

6. **Evaluation** = Making judgments about the value of ideas, or the extent to which methods or materials satisfy given criteria
   Learning outcome: *assess, select, decide*, _____, _____,
   _____, _____, _____, _____, _____

(Compare your answers with those given in Annex 1.)

In more recent versions of Bloom's taxonomy, evaluation is at a lower level than synthesis, or creation, which is considered the most high-level cognitive skill.

It is important to specify target learning outcomes to allow participants to benchmark their own performance, or the extent to which they are meeting the target learning outcomes. This in turn is in keeping with Thiagi's "law of self-direction".

Something To Do 2

Choose a module or any combination of modules in the Academy series and review the general objectives and target learning outcomes as well as the objectives of specific sections. Then fill in column 3 of the table below with the learning outcomes that are appropriate for the target participants and training duration specified in columns 1 and 2. Remember that learning outcomes should refer to participant behavior (what the participant will be able to do after going through the session), not what the trainer intends to do.

Training Duration	Target Participants	Learning Outcomes
1.5 hours	High government officials	
3 hours	Mid-level policymakers	
1 day (6-7 hrs)	ICT project managers	
3 days	Mixed group of policymakers and project managers	

Step 3: Structure the learning content.

In the Notes to Trainers at the back of each Academy module are suggestions on which module topics to cover for training sessions of varying duration. But depending on your analysis of your target participants for a particular training program, you could create your own menu of module topics, including combinations of topics from several modules.

Table 2 below shows possible training topics for a one-day training session on Module 1 with government project planners.

Table 2. Sample training plan specifying target audience, duration, learning outcomes, and topics

Training Participants:	Training Duration:
Government project planners	6 hours
Learning Outcomes: After going through the training, the participants should be able to: 1. Describe how ICTs can be used in poverty alleviation, education, health, and gender; and	

2. Analyze key factors in the design and implementation of ICT for development projects and programs in these areas.	
Module Topics:	

1. Section 2.2 – ICTs: What they are and what they can do
    2. Section 3.1 – ICTs and Poverty Reduction
    3. Section 3.2 – ICTs in Education
    4. Section 3.3 – ICT and Gender Equality
    5. Section 3.4 – ICTs and Health
    6. Section 4.0 – Key Factors in the Use of ICTs in Development	

Something to Do 3

Fill in column 4 in the table below with a list of Academy module topics that can be covered given the training duration (column 1) and target participants (column 2) and your target learning outcomes (based on your work in Something to Do 2).

To fill in column 4, review the list of Academy modules and the table of contents for each of the modules, and then formulate a list of relevant topics. You may combine topics from several modules. List the topics in the order in which they will be covered during the training.

Training Duration	Target Participants	Learning Outcomes	Topics
1.5 hours	High government officials	*What you specified here in Something to Do 2*	
3 hours	Mid-level policymakers	*What you specified here in Something to Do 2*	
1 day (6-7 hours)	ICT project managers	*What you specified here in Something to Do 2*	
3 days	Mixed group of policymakers and project managers	*What you specified here in Something to Do 2*	

ALTERNATIVELY, you could use this activity to plan an *actual national Academy training program* you need to implement soon. Describe:
    1. the target participants
    2. the planned duration of the training
    3. your target learning outcomes
    4. the topics (in sequence) that you think should be covered

Step 4: Select the learning materials or resources.

The modules are themselves an important learning resource for any national training program on the Academy. So are the slide presentations for each module that are available on the APCICT Virtual Academy (http://ava.unapcict.org/). National Academy trainers are encouraged to translate and customize these slide presentations to suit their own training needs and purposes. Box 2 lists some tips for customizing the slide presentation.

Box 2. Tips for making effective slide presentations

A slide presentation is best understood as a visual aid. It is not the core of the presentation. And it cannot substitute for poor mastery of the topic and poor delivery.

1. Include only essential information and use key phrases. Try not to have more than three bullets per slide.
2. Limit the number of slides. Use the one-minute-per-slide rule as a guide for determining how many slides to include. You can discuss a slide for longer than a minute, but you therefore have to adjust the remaining number of slides to keep within the time allotted for the presentation. When considering the final number of slides, it helps to ask yourself the question: If you had to keep to only 10 (or 5, or even 1) slides, which slides would you keep?
3. Follow a logical order of presenting information. Begin with a roadmap of the presentation (what you will cover). Keep your introductory section short and proceed to the core of your presentation as soon as possible.
4. Lay out each slide in such a way that it is easy to follow how ideas relate to each other. Titles should be on top. More important information should also be placed at the top.
5. Avoid using fancy fonts as they are often difficult to read. Use no more than two font styles throughout the presentation, and use large font sizes (not less than 24 points).
6. Use a light colored background and dark colored text. Use a simple background (patterns affect readability) and one font color.
7. Choose slide designs that are appropriate for the audience.
8. Use photos, charts, and graphs, and/or a video where appropriate. This will make your presentation more interesting.
9. Limit the use of punctuation and avoid using capital letters (except for the first letter of each line).
10. Avoid excessive use of slide transitions and animations, as they can distract from the main message.
11. Make sure your presentation can run on any computer. Test it before the presentation session.

Sources:
Kotelnikov, V. Effective Presentation, *Ten³ Business e-Coach*. Retrieved 19 June 2009 from http://www.1000ventures.com/business_guide/crosscuttings/presentations_main.html
Russell, W. (2009). Top 10 Tips for Creating Successful Business Presentations, *About.com*. Retrieved 19 June 2009 from
http://presentationsoft.about.com/od/powerpointinbusiness/tp/bus_pres_tips.htm

Other important resources that should be used in any training program on the Academy modules would be the suggestions for Further Reading within the modules, as well as local case studies on topics and issues discussed in the modules.

Selecting local case studies is a priority activity for national training program designers and planners. If there are no local case studies, then you could search for case studies in the (sub)region to which your country belongs.

Note that these cases are not necessarily written in your preferred format. For example, information about a possible case study could be buried in a long project report, or mentioned vaguely in a newspaper article. Or a case study is not in written format because the source of information is a person involved in the project. In other words, you might have to write up the case study yourself using whatever sources of information are available. When writing a case study, keep in mind your purpose for using the case study. Ask yourself: What key point/s should this case study communicate? Write the case study in a way that clearly communicates the key point/s and in way that readers would find interesting. Ideally, case studies should be short (no more than a page). The case studies in Module 1 are useful examples of how case studies should be written.

In thinking about what content to use for a national training program on the Academy, it is useful to apply the following classification of sources of content by Thiagi (2008): (Table 3)

Table 3. Sources of training content

Recorded Sources	Live Sources
Text: books, manuals, job aids, news articles, samples, unorganized information such as questions or complaints, websites	Subject matter experts (SMEs)
Graphics: photos, paintings, drawings, cartoons	Coaches
Audio and video recordings	Informants
Real objects (e.g. mobile phones)	Fellow learners

Table 4 lists examples of types of content sources that may be used for a training program on Module 1.

Table 4. Examples of different types of content sources for Module 1

Type of Source	Example
Text: book	Module 1
Text: websites	Websites listed under the Further Reading section on pp. 79-81
Text: case studies	- Case studies in Module 1 - UN-APCICT's e-Co hub http://www.unapcict.org/ecohub/e-co-hub/ecohub/case-studies - Asia-Pacific Development Information Programme. ICTD Case Studies. United Nations Development Programme. http://www.apdip.net/resources/case.

Video	• Connecting People: Changing Lives in Asia Part 1. http://www.youtube.com/watch?v=_M0jnstVsUQ • Connecting People: Changing Lives in Asia Part 2. http://www.youtube.com/watch?v=cSMFu_aRKZg&NR=1 • Connecting People: Changing Lives in Asia Part 3. http://www.youtube.com/watch?v=mYKK69VKBNI&feature=related • Connecting People: Changing Lives in Asia Part 4. http://www.youtube.com/watch?v=MPdo5ArHy7k&feature=related
Subject matter expert	• Module 1 author • A local expert in ICT for development (e.g. an academic)
Informants	Local ICTD project implementers

Something to Do 4

Choose one of the Academy modules and identify *examples in your country of each type of content source* for the topics covered by your chosen module. List your examples in the table below. Be as specific as possible. For example, if you are citing a newspaper article as a content source, list the title, the name of the newspaper, and the date of publication. If you are citing a person, mention his/her position or what qualifies him/her to be a source.

Type of Source	Local Example/s
Text	
Graphics	
Audio and video recording	
Subject matter expert	
Informant	

ALTERNATIVELY, if you are planning an *actual national Academy training program*, after specifying the target participants, the planned duration of the training, your target learning outcomes, and the topics (in sequence) that you think should be covered, list several sources of content for each topic other than the module itself.

Try to identify different types of content, both recorded and live. Be specific: list the title of the content or the name of the live source, as well as reference or contact details.

Indeed, different types of resources on the Academy module topics should be available in your own context and you should make use of them.

An important reason for making use of different types of training resources is the fact that learners learn in different ways (the "law of individual differences"). Some learn best from text materials while others learn best from audio-visual materials. Hence the value of multimedia resources.

Step 5: Design the learning activities.

According to Thiagi, effective instruction has three components:

1. Content related to the instructional objectives
2. Activities that require learners to process the content and to provide a response
3. Feedback to learners to provide reinforcement for desirable responses and remediation for undesirable responses

In equation form:

$$\text{EFFECTIVE LEARNING} = \text{CONTENT} + (\text{ACTIVITY} + \text{FEEDBACK})$$

Learning activities are key to promoting active learning, which in turn is much more effective than passive learning. Thus, in the training programs we design, we need to pay attention to designing learning activities that participants will find engaging and from which they will learn in the most effective way possible the key concepts and principles that form the core of the training program.

In this connection, it is important to rethink the use of lecture-presentations in most training programs. While a lecture is a valid form of instruction, it does not necessarily lead to deep learning because it positions the participants as passive recipients of information. For a lecture to be effective, it must first of all be the most appropriate means for achieving the learning outcomes (for example, the topic is something that needs to be explained by an expert). In addition, the lecturer has to be not only knowledgeable about the subject matter but also engaging, perceptive, and motivating. (Saskatoon Public Schools, 2004) And the lecture must be done in an interactive way, or in combination with short participatory activities.

Interactive lectures foster active learning by getting learners to engage with the content by answering a question, interpreting a case or situation, or solving a problem. The activities are designed to allow everyone to participate, and increase their chances of retaining what they are learning through immediate practice. For instructors or lecturers, the activities provide feedback on the level and extent of understanding of the topic. (MacDonald and Teed, 2009) See Box 3 for pointers on how to make interactive lectures.

Box 3. How to make interactive lectures

An interactive lecture will include lecture segments combined with activities where participants are interacting with each other and the instructor.

The lecture segments should ideally:
- focus on content that learners might have difficulty finding on their own (it is not, for example, already explained adequately in available written sources)
- lay a foundation for work that the learners will do on their own
- model an approach to problem-solving in the subject
- stimulate interest in the subject and motivate learners to find out more about it even after the lecture

Each lecture segment should not be longer than 20 minutes. The lecture segments should be interspersed with learning activities.

The interactive segments or learning activities should be short (about 10 minutes) but should involve everyone in the session. A very useful format is **think-pair-share** which has the follow format:
1. Ask the participants to get together in pairs. If you have an odd number of participants, allow one group of three. If necessary, have participants to move around the room to find a partner.
2. Ask a question that requires participants to apply critical thinking skills *(see below)*.
3. Give participants a few minutes to discuss the question and work out an answer.
4. Ask for responses from some or all of the pairs.

The question should be about the topic just lectured on and can involve any or a combination of the following:
- Interpreting a graph
- Making calculations or estimations
- Brainstorming
- Tying ideas together or synthesizing
- Applying what has been learned to solve a problem
- Analyzing examples
- Sharing experiences

Source: MacDonald, H. and Teed, R. (2009). Interactive Lectures, *Starting Point*. Retrieved 18 June 2009 from http://serc.carleton.edu/introgeo/interactive/index.html.

In all of the Academy modules, the "Questions To Think About" and "Something To Do" items may be used for think-pair-share segments within interactive lectures.

Effective interactive lectures demonstrate a balance among the three components of effective instruction, namely, content, practice, and feedback.

The importance of practice cannot be overemphasized. Trainers should design activities that give participants sufficient time and opportunity to practice new

knowledge and skills (the "law of practice and feedback"). How much time for practice? One suggestion is 6 hours out of 8 hours of training time. (Thiagi, 2007) If that is too much for you, consider spending at least half the training time on practice activities. After all, practice makes perfect.

Here's an even better idea: You do not have to accept a tradeoff between content presentation and practice activities. In other words, you do not have to spend less time on either. Instead, spend all of the training time on both content and activities by designing activities around key content. Table 5 lists learning activities for various types of content.

Table 5. Learning activities for different types of content sources

Content Source	Learning Activity	Description
Tables	Table games	Participants either organize information into structured tables or review tables of information to discover interesting relationships among variables, identify key trends, and predict outcomes.
Samples	Sampling activities	Participants analyze a collection of different samples, arrange them in different orders, identify key features, and list quality standards. Later, they apply their discoveries to create new products that meet their needs (see Table 12).
Cases	Case method	Participants review a written account of a real or fictional situation, usually surrounding a problem, and work collaboratively to identify issues, frame questions of interest to themselves, and then identify additional information in answer to their questions (see Table 8).
Unorganized information	Item processing activities	Participants organize bits of information, ideas, facts, questions, complaints, or suggestions. In some cases, participants themselves generate these items (see Table 7).
Audio and video recordings	Double exposure activities	Participants listen to an audio recording or watch a video recording, and participate in an exercise that involves interactive evaluation, analysis, synthesis, application of the new concepts and skills (see Table 9).
Surrounding environment	Field visits/field trips and expeditions	Participants explore the environment of another country, culture, organization, or time period. Participants are given a set of objectives to achieve, information to collect, or objects to obtain. In the process of completing these tasks, participants acquire new knowledge about the environment and new skills for relating to the local people.
SMEs	Interactive lectures	In interactive lectures the instructor breaks the lecture or presentation at least once to allow all of the participants to do an activity that lets them work directly with the material and apply what they have learned (see Table 10).

Informants	Brain pick activities	Participants interact with informants or resource persons (and with each other) to learn specific knowledge and skills (see Table 11).
Fellow learners	Structured sharing activities	Participants engage in a dialogue with each other about their experiences, knowledge, and opinions. Mutual learning and teaching is facilitated as participants share their best practices with one another.

Source: Thiagi. (2008). Rapid Instructional Design. Learning Activities that Incorporate Different Content Sources. *Thiagi Gameletter*, February 2008. Retrieved 1 March 2009 from http://www.thiagi.com/pfp/IE4H/february2008.html#RapidInstructionalDesign

This list of learning activities suggests possibilities for making training programs truly engaging for participants. Table 6 lists some of these activities for specific topics in a one-day training session on Module 1 with government planners. Each activity specified in Table 6 is then described more fully in Tables 7-12.

Table 6. Sample learning activities for specific training topics in Module 1

Topic	Content Source	Activity
ICTs: What they are and what they can do	Section 2.2 of Module 1	Item processing
ICTs and poverty reduction	Section 3.3 of Module 1	Case method
ICTS in education	Section 3.2 of Module 1	Double exposure activity (viewing a video)
ICTs and gender equality	Section 3.3 of Module 1	Interactive lecture
ICTs and health	Section 3.4 of Module 1	Brain pick activity
Key Factors in the Use of ICTs in Development	Section 4.0 of Module 1	Sampling activity

Table 7. Sample item processing activity on "Kinds of ICTs"

Learning outcome	To review the types of ICTs
Task	Teams classify ICTs written on metacards according to which ICTs belong together
Materials/ Resources	Metacards with pictures and names of the following ICTs (one ICT per card): radio, television, email, the Internet, computers, audio tapes, VCDs, compact discs, mobile phone, fax machine, printer, scanner, digital camera, LCD projector *(you may add to or subtract from this list)*
Time	30 minutes
Flow/Process	1. Form the participants into groups of 14 (or the number of unique cards). In every group, have participants pick one card at random. If you have two groups, make and distribute two sets of cards. If you have one group only but not enough unique cards, you can duplicate some cards. 2. Have participants in each group classify their cards into two. Do

	not tell them how to classify the cards. It is up to them to decide how best to classify the cards.
	3. In plenary, ask a representative of each group to explain how they classified their cards.
	4. Give a brief synthesis highlighting the evolution of ICTs from analog to digital and the convergence of technologies. *(see section 2.2 of Module 1 for some key points)*

Table 8. Sample case activity on "ICTs and Poverty Alleviation"

Learning outcome	To describe how ICTs are used in poverty alleviation efforts in Asia Pacific
Task	Participants read case studies and derive some generalizations about how ICTs are used in poverty alleviation efforts
Materials/ Resources	• Section 3.1 of Module 1 • Printouts of the four case studies in section 3.1 of Module 1
Time	60 minutes

Flow/Process	1. Form the participants into groups of 3-4 members each and give each group one case study. If there are more than four groups, give the same case study to two groups.
	2. Have each group read their case study carefully and then answer the following questions:
	   a) What particular poverty-stricken sector of society is featured in the case?
	   b) What ICT or combination of ICTs is used?
	   c) How does the application of the ICT or combination of ICTs help reduce or alleviate poverty?
	3. In plenary, ask group representatives to share their group's answers. Ask the other groups to take note of each group's answers. Write down the highlights of each group's report on the board or on a flip chart.
	4. After all groups have reported, facilitate a discussion where participants compare the group answers and arrive at some generalizations about how ICTs can be used to alleviate or reduce poverty.

Table 9. Sample double exposure activity on "ICTs in Education"

Learning outcome	To describe how ICTs are used to broaden access to education in parts of Asia Pacific
Task	Participants view a short video documentary showing an example of ICT use to broaden access to education
Materials/ Resources	• Section 3.2 of Module 1 • Connecting People: Changing Lives in Asia Part 1. http://www.youtube.com/watch?v=_M0jnstVsUQ • Connecting People: Changing Lives in Asia Part 2. http://www.youtube.com/watch?v=cSMFu_aRKZg&NR=1
Time	60 minutes
Flow/Process	1. Explain to the participants that they will view two short video

	documentaries. In the first video, the case is that of "ICTs in Teacher Education in Bhutan". It begins about 5 minutes into the video. The second video begins with the case of "ICTs in Higher Education in Indonesia". This case ends about 4 minutes into the video.

2. Ask the participants to answer the following questions as they view the videos:
   a) What is the rationale for using ICTs in this education sector?
   b) What are some of the gains or advantages achieved?
   c) What are some of the challenges experienced?

   You can also prepare a worksheet listing all three questions for each video case in tabular form that the participants can use to write notes on. *(see Annex 1 for the sample worksheet)*

3. Show the video documentaries.
4. After the video showing, ask the participants to form small groups of 3-4 members each and share their answers to the questions with their group mates. Groups should synthesize their answers to the questions.
5. In plenary, ask group representatives to report their group's answers.
6. After all groups have reported, facilitate a discussion on whether ICTs can also be integrated into basic education (primary or secondary education) and non-formal education programs for out-of-school youth and adults. Ask participants who are aware of actual such programs to share what they know. If no one knows an actual case, be ready to share your own cases of ICT use in basic education and in non-formal education. Use the guide questions for the video showing to structure this discussion.
7. Conclude the discussion with a brief synthesis.

Table 10. Sample interactive lecture on "ICTs and Gender Equality"

Learning outcome	To describe how ICTs are and can be used in achieving gender equality in Asia Pacific
Task	The trainer gives an overview of ICT use in efforts to achieve gender equality and participants apply what they learn in planning an ICT-supported intervention for a particular group of women in their country
Materials/ Resources	• Section 3.3 of Module 1 • Beijing Platform for Action, Fourth World Conference on Women, http://www.un.org/womenwatch/daw/beijing/platform/plat1.htm#statement
Time	60 minutes
Flow/Process	1. Begin your presentation with a slide showing the Millennium Development Goals. Point out the goal with respect to achieving gender equality. You can also show 1-2 slides about the agenda for women's empowerment adopted globally at the Fourth World Conference on Women held in Beijing in 1995.

	2. Ask the participants to briefly discuss in pairs why they think gender equality is a key development goal and whether their country is close to or has achieved this goal. Then ask for some pairs to share their answers.
	3. Proceed with a 20-minute lecture about how ICTs can be and are being used to achieve gender equality. *(Use section 3.3 of Module 1 as a reference in preparing your lecture.)*
	4. Have the participants group themselves by country and ask each group to design an ICT-supported project to develop self-confidence and economic self-sufficiency among the marginalized women in their country. They should:
	a) Identify a specific group of women (e.g. elderly women, women in urban poor communities, adolescent girls in rural communities, or even a group of women in *a particular community*) and describe their situation and social and economic needs; and
	b) Articulate the proposed ICT project objectives and project strategy/ies for this group of women.
	5. In plenary, ask group representatives to share a short outline of their proposals.
	6. End the session with a summary of what has been discussed.

Table 11. Sample brain pick activity on "ICTs in Health"

Learning outcome	To describe how ICTs can be used to achieve development goals in health in Asia Pacific
Task	Participants learn from an ICT in health program leader/manager about how ICTs can help deliver quality health care to all
Materials/ Resources	• Section 3.4 of Module 1 • Subject matter expert (SME): A medical professional who heads a local ICT in health project *(Note: Identify a local ICT in health project or programme and invite its project manager or the person in charge to give a brief talk about it. Be sure to discuss with the SME what you would like him/her to talk about and explain how it relates to the training objectives and topics. Describe the audience to him/her.)*
Time	60 minutes
Flow/Process	1. Begin the session with a brief overview of the topic ICTs in Health and then explain that you have a local expert to present an actual ICT in Health project. Introduce the SME. 2. The SME gives a 20-30 presentation on the topic. 3. Moderate an open forum in which participants ask the SME some questions about the project. 4. At the end of the open forum, synthesize the discussion highlighting the aims and approaches of ICTs in health interventions, and thank the SME and participants for their participation.

Table 12. Sample sampling activity on "Key Factors in the Use of ICTs in Development"

Learning outcome	To analyze key factors in the design and implementation of ICT for development projects and programs in poverty alleviation, education, gender equality, and health
Task	Participants review the ICTD cases taken up and abstract the key factors in their design and implementation
Materials/ Resources	• All of the case studies taken up in the previous four sessions • Section 4.0 of Module 1
Time	90 minutes

Flow/Process	1. Have participants form groups of 4-5 members each.
	2. Ask the groups to go over all of the cases discussed in the previous sessions and abstract the following:
	  a) What makes the projects work
	  b) What challenges the projects are facing
	  c) How these challenges may be addressed
	3. In plenary, have group representative share their group's answers. Tell everyone to pay attention to the group reports as they will need the information for the next step.
	4. After the group sharing, have the groups make up a checklist of do's and don't in ICTD project design and implementation. Have them write their checklists on poster paper. They will then post their checklists (in an area to be specified by you) for others to view.
	5. Have everyone look at all of the posted checklists.
	6. Make a brief presentation summarizing the key factors in ICTD project design and implementation (based on section 4.0 of Module 1). Be sure to show/highlight the connections between the group checklists and the key points in your presentation.

In designing any learning activity, remember the following principles:

1) Integrate content and activity to focus on key content and foster active learning.

2) Design and implement activities that help learners to master the content and strengthen their critical thinking, creativity, problem-solving and decision-making skills.

3) Be guided by your target learning outcome/s. Choose content and learning activities according to the target learning outcomes.

4) Engage in authentic learning: Use real-life examples and simulations of real-life activities, such as making an assessment, analyzing a problem, identifying solutions, and making a proposal.

5) Help participants build on prior knowledge and professional experience and make connections between these and the training content. Design activities to get participants with varied levels of experience and expertise on the training topic.

During the training workshop or session itself, as you do each activity remember to:

1) Provide relevant feedback. Provide opportunities for reinforcement and use
   positive reinforcement.
2) Scaffold learning. For lengthy activities, present some content before the
   activity (*briefing*), after the activity (*debriefing*), or during the activity
   (*coaching*).

Debriefing is essential for "experientially rich, emotionally intense, cognitively
complex" learning activities (Thiagi, 2008). It helps participants reflect on what they
have been doing and derive useful insights in relation to the topic or content that is
the focus of the activity. In the examples given in Tables 7-12, the last step of
providing a synthesis is part of the debriefing exercise. In a debriefing session, you
might also want to ask participants how they feel about the learning process
undertaken and what they learned from it. Debriefing should be brief (it should not be
as long as or longer than the learning activity itself!).

Step 6: Determine the modes of assessment.

In designing training programs, it is important to systematically and continually
assess training effectiveness. By this we mean the outcomes of the training, as well
as the process of training. Outcomes refer to whether the participants learned what
they were supposed to learn while process refers to the training design.

A widely used model for evaluating training effectiveness is Donald Kirkpatrick's four-
level evaluation model, which measures the following:

Level 1: Reactions
Level 2: Learning

Level 3: Transfer
Level 4: Results

Reactions refer to how participants felt about the training program as a whole, as well as specific aspects of it, such as the training facilitators, topics covered, time allotment, venue, and even food. It is important to get participants' reactions or emotional responses as these have an impact on how and whether they achieve the target learning outcomes. (Winfrey, 1999)

Level 1 evaluation is usually done through an end-of-training questionnaire. The evaluation results are useful for interpreting learning outcomes, as well as for planning subsequent training. For example, if participants say they were confused by the sequencing of topics, this could explain to some extent their less than satisfactory understanding of the topics covered. For subsequent training sessions, topics could be re-sequenced. Box 4 is an example of a training evaluation questionnaire that aims to measure the reactions of training participants.

Box 4. Sample training evaluation form

Your feedback on this module is very important to our efforts to continually improve the APCICT Academy of ICT Essentials for Government Leaders. Please take a few moments to complete this questionnaire.

Title of module ……………………………………………………………………………………………….
Your name (optional): …………………………………………………………………………………………

Please circle the number that indicates your degree of agreement with each statement below.
1 = Strong Disagree   2 = Disagree   3 = Neutral   4 = Agree   5 = Strongly Disagree

OVERALL QUESTIONS ABOUT THE MODULE					
1. The subject matter of the module was relevant.	1	2	3	4	5
2. The sequence of topics included in the module was logical.	1	2	3	4	5
3. The treatment of the module topics was adequate.	1	2	3	4	5
4. The module's level of difficulty was just right.	1	2	3	4	5
5. The module provided new ideas, insights, or perspectives.	1	2	3	4	5
6. The module developed a better understanding of major concepts and principles.	1	2	3	4	5
7. The module stimulated critical thinking.	1	2	3	4	5
8. The module fostered creative thinking.	1	2	3	4	5
9. The module developed knowledge and skills that can be applied in real-world settings.	1	2	3	4	5
CASE STUDIES AND EXERCISES					
10. The case studies were relevant.	1	2	3	4	5
11. The number of case studies was sufficient.	1	2	3	4	5
12. The number of exercises was sufficient.	1	2	3	4	5
13. The exercises stimulated critical thinking.	1	2	3	4	5
14. The exercises fostered dialogue and collaboration among learners/participants.	1	2	3	4	5
TRAINING DESIGN					
15. The objectives of the training were clearly presented at the start of the training.	1	2	3	4	5
16. The handouts and other training materials provided were					

useful.					
17. The group discussions were useful to me.	1	2	3	4	5
18. The length of time allotted for the training was adequate.	1	2	3	4	5
19. The time spent on the different topics was balanced.	1	2	3	4	5
20. There was sufficient time allotted for interaction between the participants and the trainer.	1	2	3	4	5
21. The objectives of the training were achieved.	1	2	3	4	5
THE TRAINER					
22. The trainer was knowledgeable about the module topics.	1	2	3	4	5
23. The trainer communicated his/her message well.	1	2	3	4	5
24. The trainer provided adequate instructional support to the participants.	1	2	3	4	5

Please answer the following questions.

25. What did you find **most useful** in the training and why? (Please explain your answer.)

26. What did you find **least useful** in the training and why? (Please explain your answer.)

27. On what topics, if any, would you rather have **spent more time**—whether or not they were addressed in the training?

28. On what topics, if any, would you rather have **spent less time**?

29. Would you recommend this module to a colleague? Why or why not?

30. Do you any other comments or suggestions? Please write them below.

It is also possible to do a formative evaluation of participants' reactions through participatory exercises such as the "mood barometer" exercise where the trainer asks each participant to draw (on a blank card or slip of paper) an emoticon signifying how he/she is feeling at critical moments during the training. The range of emoticons could include a smile, a frown, a sad face, a confused look, and maybe a neutral look. In this participatory activity, the trainer and participants arrange the cards or slips of paper on a board or big sheet and count the number of smiles, frowns, and so on, to gauge the overall mood of the group. Some participants may be asked to briefly elaborate on why they feel the way they do. Knowing how the group feels allows the trainer to make adjustments in the conduct of the training. And the activity in itself is a creative way of defusing any negative feelings that could adversely affect learning.

Measuring learning, which is level 2 in Kirkpatrick's evaluation model, could also be either formative or summative. Formative assessment, which is undertaken throughout the training, is usually less formal than summative evaluation, which is done at the end of the training. Formative assessment takes place through the learning activities done in the course of the training, and its primary purpose is for the trainer to be able to facilitate learning. (Earl, 2003) That is, as participants

perform various learning tasks, such as those described in Step 5, the trainer is able to gauge whether and how much they are learning from each session. This information in turn becomes the basis for the trainer to provide just-in-time support to help participants achieve the target learning outcomes. Such support could be in the form of additional exercises, further discussion, more examples, as well as better integration of the remaining sessions.

Summative evaluation of learning could be through formal or informal testing, or through self-assessment. (Winfrey, 1999) Tests or examinations are typically conducted in the context of training programs leading to certification. Participants may be given a diagnostic or pre-test at the start of the training program to establish a baseline against which to compare post-training test results. Self-assessment, though less "objective" than a test or exam, is also very useful, especially for adult learners. It "encourages a sense of responsibility and professionalism that is consistent with the notion of professional development" and it could help both trainers and participants "focus on long-term goals rather than fleeting interests". (Sherman and Kutner, 2002) Participant self-assessment of learning may be integrated into training evaluation questionnaires that ask participants for their reactions to the training, as shown in the excerpt from a training evaluation form below (Table 13).

Table 13. Sample self-assessment of learning items in a training evaluation form

PART I:						
• *Please rate each aspect of the training activity listed below on a progressive scale of 1 to 5, where 1 is the minimum and 5 is the maximum. In this scale, 3 is the middle.*						
• *If you feel that a question does not apply to you, or that you do not have enough information to express an opinion, please circle "no opinion" represented by: X.*						
• *Indicate your answer by circling the corresponding number or the X at the end of the line.*						
• *Please circle only one answer per question.*						
If you made a mistake in marking an answer (that cannot be erased), please do the following to correct it: 1) circle your preferred answer, 2) draw an arrow to it, and 3) write the word "correct" next to the arrow.						
II. Questions specifically related to this training activity:						
Relevance:						
1. Relevance of the training activity to your school needs	1	2	3	4	5	X
2. Relevance of the training activity to your country's needs	1	2	3	4	5	X
Benefits of the training activity:						
3. Extent to which you found new sources of information useful for your work	1	2	3	4	5	X
4. Extent to which you gained ideas that you expect to use in your work	1	2	3	4	5	X
5. Improvement in your confidence about performing your work	1	2	3	4	5	X
6. Extent to which you were exposed to concepts that were new to you	1	2	3	4	5	X
7. Usefulness for you of the concepts to which you were exposed	1	2	3	4	5	X
8. Extent to which you acquired new knowledge on pedagogy: resource-based learning, instructional design	1	2	3	4	5	X
9. Usefulness for you of this knowledge acquired	1	2	3	4	5	X
10. Your current ability to use this knowledge acquired	1	2	3	4	5	X
11. Extent to which you acquired skills that were new to you	1	2	3	4	5	X
12. Usefulness for you of the skills that you acquired	1	2	3	4	5	X

13. Your current ability to use the skills that you acquired	1	2	3	4	5	X

Source: World Links for Development. (2009). *Training Manual v3 for Phase 1 – Introduction to Teaching with Computers.*

At Level 3 of Kirkpatrick's evaluation model, the focus of evaluation is **transfer**, or whether participants are able to apply in their everyday environment what they have learned from the training. This evaluation is done some time after the training has been completed and in the participants' own professional context. (Winfrey, 1999) Participants may be interviewed (preferably by someone other than the trainers) and/or asked to fill in a short questionnaire. The questions should aim to ascertain whether participants are applying what they learned at the training in their own work, how, and to what extent. Box 5 lists sample interview questions for a Level 3 evaluation.

Box 5. Sample questions for assessing transfer

1. What new knowledge and skills did you learn from the training you attended on ICTs and development last March 2009?

2. Which of these are useful for your work now?

3. In what ways do you use or apply the new knowledge and skills you gained from the training in your work?

4. What are you able to do now that you were not able to do before you attended the training?

5. If you were to attend a follow-up training on ICT and development, what topics would you like covered? What specific questions about these topics do you want answered during the follow-up training?

These questions, which are best asked either in individual interviews or during a focused group discussion, are purposely open-ended to elicit as broad a range of responses as possible. In the first question, to ascertain how much participants really remember about the training, no checklist of training topics and learning outcomes is provided; instead, participants are encouraged to mention whatever topics they can recall on their own. The fourth question is designed to probe the answers to the second and third questions. Answers to the fifth question should complement answers given to the other questions, aside from providing the training organization with information that would be useful for planning further training.

A Level 4 evaluation looks at **results**, which is defined as the impact of what the participants have learned on their productivity, efficiency, and effectiveness. (Winfrey, 1999) This type of evaluation requires going beyond self-reports to reviewing evidence such as projects or programs proposed and/or implemented by

the training participants, project outcomes achieved, and stakeholder groups reached.

It is not always feasible to do a Level 4 evaluation. For one, there are too many variables other than the training program itself that would impact on the productivity, efficiency, and effectiveness of training participants. However, a Level 1 and Level 2 evaluation are certainly doable both in the formative and summative stages. If resources permit, it is a good idea to do a Level 3 evaluation particularly for a medium- to large-scale training program such as a national training series on the Academy of ICT Essentials for Government Leaders.

Something To Do 6

Design a training evaluation form or questionnaire for the Academy training program that you are planning to implement in your country. This instrument should allow you to gauge the training participants' reactions to the training, as well as their sense of how much they learned from the training.

A key point to remember is that in adult learning and continuing professional development contexts, evaluation is best understood as taking the measure not of the training participants but of the training program's usefulness for the participants' professional contexts. For this reason, assessment should, as much as possible, be participatory, formative, and authentic. And assessment outcomes should prove most valuable as a basis for improving training design. And so the instructional design process goes on in a cycle of continuous improvement.

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ANNEX 1

Answers to Test Yourself 1

1. Knowledge: enumerating, defining, describing
2. Comprehension: summarizing, paraphrasing, interpreting, discussing
3. Application: calculating, solving, illustrating, relating, modifying, experimenting, discovering
4. Analysis: ordering, connecting, arranging, dividing, comparing, contrasting, inferring
5. Synthesis: substituting, creating, designing, inventing, making projections, composing, formulating
6. Evaluation: ranking, grading, testing, critiquing, recommending, concluding, justifying

Sample Worksheet for Sample Double Exposure Activity (on Table 9)

Instructions:
1. You will view two videos of cases of ICT use in education in Asia Pacific. One shows the use of ICTs in Teacher Education in Bhutan while another shows the use of ICTs in Higher Education in Indonesia.
2. As you view the video, try to formulate answers to the questions below. Review the questions before the videos are shown. Write your notes in the space provided.
3. Be ready to share your notes with group members after the video viewing.

Questions	ICTs in Teacher Education in Bhutan	ICTs in Higher Education in Indonesia
a) What is the rationale for using ICTs in this education sector?		
b) What are some of the gains or advantages achieved?		
c) What are some of the challenges experienced?		