Training in agroforestry

A toolkit for trainers

by

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World Agroforestry Centre

TRANSFORMING LIVES AND LANDSCAPES

The World Agroforestry Centre (ICRAF) is the international leader in agroforestry - the science and practice of integrating 'working trees' on smallholder farms and in rural landscapes. Agroforestry is an effective and innovative means to reduce poverty, create food security, and improve the environment. The Centre and its many partners provide improved, high quality tree seeds and seedlings, and the knowledge needed to use them effectively. We combine excellence in scientific research and development to address poverty, hunger and environmental needs through collaborative programmes and partnerships that transform lives and landscapes, both locally and globally.

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Foreword

Economic growth and rural development cannot be sustained by the continued extraction of natural resources, nor simply through migration of the poor to urban areas. Instead, the steady reduction of rural poverty will depend largely on the development of human resources and social capital, coupled with investments in infrastructure that support market linkages for rural producers.

To achieve progress, we must invest in people at all levels of society. Farmers – women and men– need to understand the best techniques to propagate and manage their trees and how best to process and market their products. They need enlightened advice and guidance of extensionists, grass-roots development workers and entrepreneurs. At the same time, researchers must stay abreast of the latest scientific developments and be able to apply science to the solution of field problems. Educators from primary schools to universities likewise hold an enormous responsibility for advancing the acquisition of knowledge. Also policy makers and shapers must be better informed and skilled if they are to fulfill the growing expectations of society.

The implication for the World Agroforestry Centre is a continued and growing commitment to, and commensurate investment in, the sharing of knowledge and strengthening of capacity among those key individuals and institutions that will drive rural development.

With support from the Government of the Netherlands and the Swedish International Development Agency (Sida), the Centre has been able to maintain a high level of investment in training and education over the past decade. The Netherlands has, in particular, supported training of trainers courses in agroforestry since 1997. The experience gained through these courses led us to conclude the need for a 'toolkit for trainers' aimed squarely at improving the effectiveness and efficiency of training investments. Indeed, our interaction with over 350 participants from 183 institutions in 40 countries provided a rich knowledge base from which to develop this important learning resource.

I congratulate Peter Taylor and Jan Beniest for developing a very practical, concise, easy to understand, set of guidelines for planning and running training courses. Although the training approaches and techniques described here are based soundly on the sciences of pedagogy and education, they also reflect the practical biases of both authors' extensive field experience in the developing world. For these reasons, I am confident that all trainers in agroforestry and natural resources management will find this toolkit a valuable contribution to their work.

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This funding has allowed the Centre and its collaborating partners to organize a series of regional training-of-trainers courses between 1997 and 2002 and to develop supporting training materials under a project entitled *Strengthening training and education in agroforestry*. Over 350 participants from 183 training, education, research and development institutions in 40 countries have attended these courses and contributed to the development of this Toolkit through their active participation. They are our main target audience for this Toolkit and their contribution to the project is herewith acknowledged.

William Umbima, Information Officer and Head Librarian at the Centre contributed to the sections that required information sources on agroforestry. Evelyn Kang'ethe, Programme Assistant Training and Education, contributed to the development of references and resources lists.

Introduction to the Toolkit

Agroforestry and the World Agroforestry Centre

Agroforestry means growing trees on farms to improve livelihoods and to protect the environment. Even though farmers have used trees in crop and livestock farming systems for centuries, it is only over the last decades that this approach to land use gained more prominence. Worldwide increase of populations and the associated agricultural land use has led to the degradation of the natural resource base. The resulting deforestation is reaching alarming rates in many developing countries in the tropics.

Established in 1977, the World Agroforestry Centre, previously known as the International Centre for Research in Agroforestry (ICRAF), has a global mandate to conduct strategic and applied agroforestry and integrated natural resources management research and development of appropriate agroforestry technologies for more sustainable and productive land use in partnership with national institutions. The Centre aims to improve human welfare by alleviating poverty, increasing cash income, especially among women and improving food and nutritional security. It aims to enhance environmental resilience by replenishing soil fertility, conserving the soil, enhancing biological diversity, sequestering carbon and reducing emissions of greenhouse gases.

The Centre's collaborative research and development agenda is being conducted in 23 countries located in several eco-regions, representing diverse biophysical, socio-economic and environmental conditions in the tropics. The main eco-regions are: the sub-humid highlands of eastern and central Africa, the sub-humid plateau of southern Africa, the semi-arid Sahel, and the humid tropics of Latin America and southeast Asia.

As of 2003, the Centre's work is organized under four cross-cutting themes: Land and People, Trees and Markets, Environmental Services and Advancing Institutions. Training and education activities are an integral part of the Centre's strategy to strengthen national education, training, research and development institutions at the global and regional level and thus to empower them to fully exploit the potential of agroforestry as a sustainable and profitable land use approach.

The Centre and its collaborating partners are providing several training and education activities such as short training courses and workshops, the development of supporting training materials, strengthening formal education levels as well as the provision of individual training opportunities.

Why this Toolkit has been prepared

In response to training and education needs and opportunities, as expressed by the Centre's partner institutions as well as its scientists, the Centre has organized numerous courses on general and specialist topics related to agroforestry research and development. The Centre's training and education staff are planning, organizing and implementing these training events in close collaboration with its scientists who are the primary resource persons for any such event. Recently, the Centre has incorporated a 'training-of-trainers' approach for some of its training courses to maximize the impact of agroforestry extension services. Participants in these training-of-trainers events are the Centre's training and education alumni and partners working at national research, development, training and education institutions.

Many training and education resource persons are primarily subject matter specialists in agroforestry and take on training or teaching assignments in addition to their other routine responsibilities. Certainly most of them have rarely been exposed to the science and practice of education and it is with this audience in mind that we decided to produce a practical Toolkit that will help them in being better training organizers and resource persons.

Purpose and approach of the Toolkit

The purpose of this Toolkit is:

- To explain the main concepts and elements of a participatory curriculum development process.
- To present practical skills and knowledge leading to the effective design of training programmes.
- To allow learners to acquire confidence in applying new methods and approaches to teaching and learning.
- To show how to use a participatory approach in agroforestry training programmes.

This Toolkit emphasizes an active learning approach, based on a process of experience, reflection and action. The key principle is that people do not learn simply by passive listening. They need to be involved from the onset of the training, even in the design of the programme where possible. This approach challenges traditional roles of teachers and students or trainers and trainees. To use this Toolkit effectively, teachers and trainers need to reflect on their own roles in the learning process. They will need to become learners, along with other participants in training programmes. They will need to understand and practise effective facilitation and communication skills, as well as bringing in their technical knowledge. The Toolkit focuses on the design of a training programme using a participatory approach referred to as PCD, or Participatory Curriculum Development.

Trainers and teachers who follow this approach in the design of their own training courses, will find that the chances of successful outcomes will be greatly increased.

Who can benefit from this Toolkit

The Toolkit has been written for a diverse audience:

- in-house training teams who might want to rethink how they design training programmes and use this Toolkit as a reference,
- resource persons involved in the planning, organization and implementation of a training event,
- trainers and educators teaching agroforestry and its related subjects in national or regional institutions,
- subject matter specialists who have been requested to contribute one or several subjects of a training event,
- people with a background in training and education, who want to teach others to become better trainers.

How this Toolkit is organized

The Toolkit has been divided into three parts:

- **Part I** focuses on Participatory Curriculum Development (PCD) and its main phases involved in training event design. It explains the philosophy and theory, which underpins PCD, and in turn provides a framework for all the different stages of designing a training event. Part I is the backbone of this Toolkit and it is therefore recommended that all users read Part I first before moving on to Part II.
- **Part II** explores ten key elements of the training design process in detail. For each key element, there is a 'fast track', which gives a quick overview of the main learning outcomes, the training strategies used, the key content, and some relevant resources. They are targeted at educators who will be directly involved in designing the training as well as the trainers of the trainers. After each 'fast track' there is a series of key resource materials with references and sometimes annexes where relevant. These can help users of this Toolkit to go deeper into the topic or may be used for distribution to participants in a training of trainers course. The ten key elements do follow a logical sequence in the course design process. Readers who are unfamiliar with the concept of training, are recommended to read each key element in the sequence provided, as this will enhance their understanding of training and help to

develop good practice. Experienced trainers may prefer to go straight to an element of particular interest rather than working systematically through the entire Toolkit.

The ten key elements are as follows:

- *Adult learning – theories and concepts*: Training in agroforestry involves adult learners and this has important implications when planning, organizing and implementing such training activities.
- *Stakeholder analysis*: There are many stakeholders that are involved in, and stand to benefit from, the training that is provided and all of them need to be considered, and eventually consulted, if the training is to be successful.
- *Training Needs Analysis*: Training can only be successful if based on proper training needs identification and assessment. Even when training in state-of- the-art topics, it is still important to know what needs will be addressed by such training.
- *Setting aims and objectives for a training course*: Once training needs have been identified, trainers will need to develop clear aims and objectives for the training programme(s) that will address these needs.
- *Content, methods and materials for teaching and learning*: After developing the training course framework, it is necessary to consider the related content, methods and materials, which are needed to facilitate learning, and to achieve the identified learning outcomes.
- *Teaching and learning methods*: Training is often seen as a series of 'classroom' sessions but there are many other appropriate teaching and learning methods that can be effectively used to facilitate learning.

- *Training materials*: Well selected and properly produced training materials facilitate the training and learning process and serve as a reference long after the training took place.
- *Lesson planning*: Lesson or session planning is a very practical activity that translates the overall training course design into detailed plans combining content, methods and materials to achieve the clearly defined learning outcomes.

- *Evaluating and assessing training courses*: Evaluation is more than an extractive tool providing 'data-on-demand'. It should be part of a continuous process of reflection and action using a participatory approach.
- *Organizing short training activities*: If training events are to be successful, they should be very well planned, organized and implemented.

- **Part III** lists useful websites containing resources, information and materials relevant to agroforestry training and education.

It is expected that these materials will be updated from time to time and therefore they have been compiled in a ring binder. This will also allow users of the Toolkit to complement this document with additional materials and their own notes.

This Toolkit contains a CD with the original word processor files of all the text (in Microsoft™ Word format) for users to adapt or modify as needed. A printable (pdf) file is also included that can be read on-line and for printing of further copies.

We hope that you will find this Toolkit a valuable tool and resource for the development of your own training courses. It is not a blueprint; your experience and practice will enable you to use this resource effectively and enhance your capacity to design and deliver training courses.

Key terms and acronyms

Aim: a broad statement which gives a general direction or guidance to a teaching or training programme.

Curriculum: a guide for learning which integrates the philosophy and orientation of a training programme, expected learning outcomes, key content, methodology and evaluation for the teaching and learning process.

Curriculum development: a flexible, dynamic process of developing the curriculum or course for a particular purpose and group of learners.

Information: a source of data or sensory input, organized or arranged into a pattern which can be interpreted.

Knowledge: A complex construction of information and individual experience with an interrelated social and environmental dimension. (N.B. many different interpretations of knowledge exist, and this is one preferred in this Toolkit)

Learning outcome: a statement of the learning which is expected by the end of a training programme, but presented in a way which does not predetermine the outcome for every learner (usually more process-oriented than an objective).

Objective: a statement of what a learner is expected to learn by the end of a training course, expressed in terms which are specific, measurable, attainable, relevant and time-bound.

Stakeholder: groups, individuals, organizations who have a claim, gain or benefit, or who feel they should have some ownership of a process, programme or project.

DACUM:	Developing A Curriculum
D&D:	Diagnosis and Design
ITK:	Indigenous Technical Knowledge
KIS:	Knowledge and Information System
KSA:	Knowledge, Skills and Attitudes
NRM:	Natural Resources Management
PCD :	Participatory Curriculum Development
PLA:	Participatory Learning and Action
PRA:	Participatory Rural Appraisal
RPK:	Rural People's Knowledge
SMART	S = Specific, M = Measurable, A = Attainable or Achievable, R = Relevant or Realistic, T = Time-bound
SSI:	Semi-Structured Interviewing
TNA:	Training Needs Analysis

PART I:
Introducing Participatory Curriculum Development (PCD)

Introducing Participatory Curriculum Development (PCD)

Learning outcomes

After reading this part, you will be able to:

- Explain the main concepts and principles of Participatory Curriculum Development (PCD).
- Follow the PCD process in order to design, deliver and evaluate a training course in agroforestry or natural resources management.

Introduction

This part introduces the key elements of the PCD process, and provides an explanation on why it has emerged in recent years. It is important since it provides a frame of reference for the other topics in this Toolkit, and we recommend that you read it before proceeding to Part II. The main steps of the PCD approach have value for the design of all kinds of training events, for the design of formal education programmes and for the design of short, in-service training events. A lot will depend on the training event under consideration when it comes to deciding on how much participation will be required from which stakeholders, at what level(s) and in what detail.

In this part, we will look at several things. What do we mean by 'curriculum development', and how does this relate to training course design? We will consider why learning and training should be participatory, and what benefits you will gain when you adopt a participatory approach. We will think about who can participate in curriculum development. Then we will look at some of the challenges, which you may face when you follow a participatory approach, and we offer some concrete suggestions on how you can overcome these challenges. We will look at what participatory curriculum development actually involves, and the main phases you should follow as you put it into practice.

What is curriculum development?

It is always good at the beginning of a process to start by reflecting on your own experience. Perhaps you already have experience of designing and delivering training courses? Try to answer the following questions:

- What does curriculum development mean to you?
- What experiences have you had with curriculum development?
- What have you, personally, learned from these experiences?
- What have others who were involved learned from these experiences?

Perhaps, when you see the word 'curriculum', you think of:

- a formal setting, a product like a book, or a document?
- some inputs like a small group of people sitting in an office making a document that will be sent out to many teachers or trainers all over the country?
- the resources that are needed for curriculum development to take place?
- all of these, and more?

It is difficult to give a definition for curriculum development, because it will always be affected very strongly by the context in which it takes place. We can look back in history and find out that the word *curriculum* originally came from a Latin word, which meant a racetrack that horses ran around. Today, we might call it a racecourse, and so we see that the words *curriculum* and *course* are closely related. There is a suggestion that something continuous is happening, maybe over a long time, although it is equally valid for short courses. We can think of curriculum development as a continuous process, which is relevant to the situation where it takes place, and flexible, so you can adapt it over time. As in a race, there may be a finishing point, but if you work in curriculum development, you will probably find out that the work does not end at a particular moment. This is what makes it very interesting and exciting!

The following description of curriculum development, rather than a definition, provides a basis for the approach taken in this Toolkit:

Curriculum development describes all the ways in which a training or teaching organisation plans and guides learning. This learning can take place in groups or with individual learners. It can take place inside or outside a classroom. It can take place in an institutional setting like a school, college or training centre, or in a village or a field. It is central to the teaching and learning process (Rogers and Taylor 1998).

From this description, you will see that curriculum development can take place in many settings, and may involve many people. Typically, curriculum development involves four main elements:

1. Identify what learning is needed and decide on the type of training you need to provide to meet these learning needs.
2. Plan the training carefully, so that learning is most likely to take place.
3. Deliver the training so that learning does take place.
4. Evaluate the training so that there is evidence that learning has taken place.

These elements can be addressed in different ways. It is important that the *approach* you use will lead to effective training and teaching. This Toolkit strongly recommends that you follow a participatory approach to curriculum development since this will bring about the best results, and lead to real learning.

Why this recommendation?

The fact is that a lot of training and teaching is not effective. Many traditional approaches to curriculum development, and the resulting curriculum, do not provide the guidance to learning that is needed by both trainers and participants. In addition, curriculum development rarely involves the different groups or individuals who will gain from, or have something to offer to the training.

Traditional approaches to curriculum development

Content approach

We can identify several different 'traditional' approaches to curriculum development. The most common approach until recently is the 'content' approach. This is where the curriculum is basically a list of knowledge – things that the learners need to know. Usually this list is made either by the trainer, or by subject-

matter specialists, or by a curriculum committee or group. The content approach usually results in a curriculum, which is very theoretical, academic, and based on disciplines (e.g. 'soils', 'plant physiology', 'forest inventory', 'soil-water interactions' etc.). In this approach, the trainer receives little or no guidance on how to facilitate the learning process.

Product approach

Another approach commonly used is the 'product' approach. In this case, the focus is on what the learners will be able to do (and the knowledge and skills they require) after the course has finished. This approach usually follows a systematic planning procedure, and assumes that there are common goals for the learners, with the provision of adequate expertise, resources and technology. Setting objectives is a very important part of this approach. Needs identification is strongly linked to an analysis of a job or sets of tasks that should be carried out. The DACUM[1] methodology is a well-known tool for needs identification, in which different stakeholders, especially those with specific job-related skills, are called upon to provide information on the nature of the jobs which professionals should carry out in their working environment. It requires an accurate, detailed identification and description of what a job involves (the tasks and the skills) – sometimes these are termed 'competences'. DACUM itself can be quite participatory, but it still assumes that a full set of skills for a particular 'job' can be identified. This is certainly true for some jobs, but farming or forestry are very complex 'professions'. Identifying the competences needed by farmers and foresters can be very difficult, especially in a dynamic and changing 'agroforestry' environment.

Process approach

The 'process' approach is characterized by the recognition of individual perception and behaviour, and the variations in the social contexts of different groups of learners. It adopts a less structured procedure, and is based upon an appreciation that understanding and knowledge depend on a process of constantly shifting interactions between individuals, and between them and their environments. The 'content' and 'product' approaches are more closed, uniform, predictable and 'safe'. The 'process' approach results in a more open, varied, unpredictable and 'risky' curriculum. Specific objectives are often not used, although there may be an attempt to identify overall 'learning outcomes'. These are more likely to be set on an

[1] Developing A Curriculum (DACUM)

individual basis rather than for all the learners. With a process approach, the curriculum development itself becomes an intervention, which may have an impact upon individuals as well as on organizations and institutions.

Which approach to use?

We cannot say that one of these approaches is always better than the others, although the content approach is least likely to result in successful learning, and is not recommended! Both the product and process approaches have definite advantages and disadvantages. The analysis of the situation prior to training should help the trainer to decide which approach is most suitable. For example, where a job and the tasks are very clearly defined, then a product approach should be very effective, as long as individual learners' requirements are taken into consideration. Where it is difficult to identify specific job-related competences, it may be better to have a more open-ended, process approach, whereby the learners and trainers can constantly review the learning needs as they progress through the learning process together.

Whether a product or a process approach is used, it is vitally important to identify *who is involved* in curriculum development, and ensure that all the groups and individuals who have a real interest or stake in the training are able to contribute to the curriculum development process. This often does not happen; the product approach is usually carried out in a very top-down way. Manpower planning, is an example of a product approach, and is often done at a very high level of government. A few people make decisions on behalf of many others. DACUM, on the other hand, is often very participatory, although it is based on the assumption that a job can be described by a group who are perceived to be 'experts' in that field. In addition, a process approach is likely to be participatory by nature. However, with the process approach there is a danger that not enough effort is made to monitor and evaluate any products as well as the process, to ensure that there is actually an impact from training. Clearly in training, good quality products are needed. So, what kind of process will increase the likelihood of these products being realized?

We can see that there are different approaches to curriculum development, and there are advantages and disadvantages of using different approaches in different circumstances. Moreover, curriculum development is more likely to bring about effective results if a participatory approach is used.

Why should curriculum development be participatory?

You will find some real benefits if you use a participatory approach to curriculum development. Primarily, the training you provide, and the learning of all participants, will become more effective. Why is that? As an example, let's first think about something that you are probably very familiar with: the delivery of the training. No doubt, you have experienced training as a participant at some time in your life.

It is very common, unfortunately, for teachers and trainers to do a lot of talking. The trainer takes on the role of 'expert', and tries to transfer 'knowledge' to the learners. The learners are not asked to do anything, other than to be there, and perhaps to be quiet. Maybe sometimes they ask a question, which the trainer will answer. In this situation, it is unlikely that anyone will be trained to do anything, and not much learning will take place. Except that some people will learn that training can be a very boring activity. How does this compare with training courses you have experienced, either as a trainer, or as a participant?

In some training courses, however, there is much more *participation*. This means that more people than the trainer are actively taking part. If learners participate actively in the learning process, then they are more likely to learn, and training is more likely to be effective. They will have more ownership in the training, because their needs will have been identified, and hopefully they will also be involved in deciding how their needs can be met. This will increase their motivation, which will help them to learn more effectively.

Many people would agree with the idea that participation in training and learning is a good thing. Unfortunately, participation rarely extends beyond the delivery of the training. Much greater benefits can be achieved by encouraging participation throughout the *entire* curriculum development process. What benefits will you find if you follow this principle?

Here are several:

- You should have greater opportunities for discussion and reflection with different stakeholders (people and groups who have an interest in the training). This will help everyone learn, and work together more effectively.
- You should be able to form links and networks more easily, which will allow you to share information better than before; your courses should become more relevant to the local context.
- Some groups and individuals who do not normally have a 'voice', such as women, poor people, or children, may become included in negotiations and dialogue; they will benefit more as a result of the training.
- You should be able to establish a dynamic course design process as new linkages and lines of communication are set up, resulting in greater satisfaction with your training programmes.
- Different stakeholders can gain greater responsibility for various stages of the curriculum development process; this increases the motivation and commitment of everyone who participates.

We can summarize all these benefits by saying that if you use a participatory curriculum development approach, your training will be more effective, and the benefits (the learning which takes place, and the change in behaviour which results) will be more sustainable. With benefits like these, you might expect participatory curriculum development to be a very common approach. Unfortunately, the evidence shows that many people, especially in rural areas, are involved very little in the development of education and training programmes, which affect them directly. It is interesting that participatory approaches seem to have been adopted more widely by grass-roots extension organizations than by universities and formal teaching institutions. Moreover, where participatory approaches have been used, the benefits have been seen: greater ownership by everyone involved, better solutions to complex problems, and more sustainable outcomes.

So why are participatory approaches not used more often?

One reason is that participation is perceived as requiring more time and resources. This is often true, but it is also commonly found that the better the process and

means of production (which means more time may be needed), the higher the quality of the outputs. Careful management of inputs such as time and money is therefore very important. Another reason is that real participation means sharing power. Power over resources and their use, power over decision-making, power over who gets the benefits. Many people and organizations find it difficult to really share power and its benefits. Sometimes this is because they think they will lose some benefits themselves, but more often, it is because they have never really thought about participation in practice. If you use a participatory approach to curriculum development, you will be able to help more people to learn more things that are useful, so that they can use what they have learned for the benefit of themselves and others. Everyone, including you, will gain.

Participatory approaches are not new, of course. There are a number of recent examples of initiatives in the area of forestry education and training which attempt to increase the extent of participation in curriculum development, for example in east and southern Africa (Temu, Kasolo and Rudebjer 1995; Järlind 1998), in Nepal (Dearden 1998) and in the Philippines (Dalmacio 1999). In all these cases, participation has been seen as a factor critical to the success of the curriculum development process, and efforts have been made to increase the extent of participation of different stakeholders through activities such as workshops, meetings and surveys. Frequently, stakeholders have been called upon to provide information on the nature of the jobs which foresters should carry out in their working environment, as in the DACUM approach we mentioned earlier (Temu, Kasolo and Rudebjer 1995). There is no doubt that this is a sound way of working where jobs are clearly defined. In many contexts, however, the work of foresters and people engaged in (agro)forestry-related activities is changing so rapidly that the job cannot be used as a starting point. In these cases, job descriptions or profiles are often non-existent or out-dated, and so it is necessary to explore the context much more deeply and intensively. A wider range of tools and methodologies may be needed, and so approaches such as DACUM may be quite complementary as a component within the PCD process.

Maybe now you have some questions about participation? How much should someone participate at any one particular time? And who should participate? When you set up a process of participatory curriculum development, you need to decide to what extent different groups or individuals can or should participate.

Who participates and why?

Two groups are always recognized as being involved in training courses: the trainers and the learners. But what about other participants? Who can also participate in the overall process of training and learning? You may find that answering the following questions is a useful exercise:

- Who has participated in the design of training courses in which you have been involved?
- Why did they participate?
- Who decided they should participate?
- What did they gain?
- What did they contribute?

The first question above asks, 'Who has participated?' The groups and individuals who participate in any process are normally called *stakeholders*. This term is used, because we are thinking about people who hold a stake in the entire training process. This means people who have a claim, or who feel they should have some ownership of the process. And it also means people who may gain, or who may benefit from being involved in the process.

In training, there are many different stakeholders. Because there are likely to be many, we can divide them into two groups. External stakeholders or 'outsiders' come from outside the institution or the immediate setting where the training is designed and delivered. They may include policy makers, administrators, experts, employers, clients or 'end-users' such as community members, extensionists, researchers, farmers, donors, parents, materials or book producers. The list can be long and varied. Internal stakeholders or 'insiders' come from within the institution or setting. They may include trainers, course participants, institutional managers, subject matter specialists, technical and support staff.

Every context will have its own particular list of stakeholders. You will need to identify which stakeholders have an interest in the training you design by carrying out a *stakeholder analysis* (see Part II, topic 2 - Stakeholder analysis). It is important to realize that different stakeholders are interested in different things, depending on

how they perceive their claims or gains. Some stakeholders are interested in the process of training (e.g. how the course is taught, what kind of learning experiences are provided), for example the trainers and the learners. Some of the stakeholders will be more interested in the product (e.g. how many graduates are produced, with what grades), such as government officials and donors. Learners and trainers are probably interested in both process and product. Some stakeholders have a general interest, e.g. policy makers, whilst others may have a very specific interest, e.g. employers.

Many stakeholders may be very supportive of the training approach, whilst others may be less supportive, for example, managers who feel they have limited funds available. Occasionally, some stakeholders are hostile, for example, where there is direct competition between institutions. Some stakeholders will be very open about their interest. These stakeholders are more straightforward to work with, regardless of whether they support or are against the training. Other stakeholders may not reveal their true opinion, sometimes for strategic reasons or because of cultural beliefs and attitudes. This is one reason why participatory curriculum development can become a longer and more dynamic process than traditional approaches to course design. The list of stakeholders may change over time, as the context changes, or as the nature of the training changes. It is important to monitor the situation to keep a check on how relevant stakeholders are involved, as well as the nature of their involvement.

What does participation mean in practice?

Although participation is often thought of as a good thing, it is not easy to achieve. Many people involved in development see participation more as a problem than an approach worth following. This is often because approaches, which are claimed to be participatory, are actually quite the opposite. Or it may be because some professionals and practitioners try to follow the same 'blue-print' for participation in every context. This is not realistic, or an appropriate way to work. To avoid falling into the trap of 'forcing' participation in ways which do not suit the local environment, it will help you if you build up a set of principles, which you can follow in order to stay on the right track.

There is no ready-made list of principles, which apply in all situations, but the following may help you set up your own list.

- The curriculum development process does not have to be dominated by one group or individual. We should aim for joint-leadership, although someone will need to make the final decisions.
- Everyone looks at the world differently. We need to respect these different views, and find out where our views coincide with the views of others.

- All stakeholders, both insiders and outsiders, have something to contribute to the process. That is why they are stakeholders. We need to find out how to help them make their contribution most easily and effectively.

- Each person makes his/her own knowledge; there is no one 'knowledge'. We need to respect the different types of knowledge and experience of others.

- Participation is active, and involves different people practising, or 'learning by doing'. As a result of participating, a person's knowledge will change.

- As well as learning through their knowledge and practice, different stakeholders hold different values, attitudes and beliefs. We need to understand these, and take them into consideration when we share ideas with others.

- Every context or local environment will be different; no two situations are identical. We need to try to understand every situation, and to accept it is complex. If we try to oversimplify a situation, we will make the learning process more difficult.

Can you add some more principles of your own? If you discuss these principles with other colleagues or stakeholders, you may be surprised at what you develop.

Challenges for PCD

Achieving real participation is not easy, and the challenges to be faced should not be underestimated. However, having clear, personal principles will help you, as well as developing an understanding of some theoretical concepts about teaching and learning. We will look at some of these in the first topic of Part II, Adult learning. From experience of using PCD in different situations, there are some specific challenges, which you may come across. In Part II of this Toolkit, you will find many 'tips for trainers'. Here are some tips (adapted from Taylor, 2003), which should help you to address some of the challenges of PCD.

Tips for trainers

Challenge: Creating a mechanism by which different stakeholders can work and interact on an equal basis is complex due to different perceptions, experience, educational background and understanding of the wider course design. Some stakeholders may have unrealistic expectations at an early stage and these may not be met. Others may even feel that they have been invited as a 'token gesture', just to gain approval from some other agency such as a donor.

Response: Do not assume that all stakeholders are the same, or have the same interests or perceptions. Establish a 'platform' where you can have an open discussion or dialogue with different stakeholders. Try to make this non-threatening and constructive. Explain diligently and clearly what exactly you hope to achieve, and find out what their views are. Always be clear about why a particular stakeholder is to be invited to participate, and take time to discuss with different groups about what their role might be. Whenever possible, help different stakeholders to identify their own needs, and the ways in which those needs can be addressed through a joint effort.

Challenge: Involving stakeholders may be costly in terms of their time and effort, especially where they have very few resources or low income. Participation is demanding on time and resources; it is not a 'quick-fix' approach, and this may alienate some policy makers, donors and practitioners. In particular, there are often shortages of resources and logistical problems in involving farmers in a

meaningful way; poor people may not be able to afford the potential loss in production or income by spending time away from their work.

Response: Try to find out the reality of costs and resources needed for participation. There are often resources around which are untapped. If necessary, provide resources in a clear and transparent way, according to clear guidelines. Hold special discussions with key decision-makers, and ensure that they are informed regularly and thoroughly. Explain the aims of the process openly and honestly, and emphasize that the results may well be better and more sustainable than through quick fixes. Try to understand and respect the realities of the lives of those you would like to work with, especially farmers. Spend time finding out about their lives and work, and try to arrange events and activities at times when most people can attend without too much difficulty (e.g. for farmers, avoiding market days, harvest time, etc.).

Challenge: Bringing groups of people together has logistical implications which may be beyond the capacity of the training organizers.

Response: Try to be well organized and plan events carefully. If necessary, go to the people rather than bringing people to you. Try to coincide your own events with others where many of the stakeholders will be present.

Challenge: Training course developers may think that they know best, and not value the opinions of some stakeholders, especially rural people; they may be unaware of the reality of the rural context and lack field-based experience. On the other hand, some stakeholders are suspicious or are intimidated by the training course developers because they think they are really looking for other types of information, or because they have bad experiences of training which was not useful.

Response: You should accept that you cannot know everything. It is by sharing ideas with others, and learning from them, that you will work more effectively in the long run. The more you are prepared to learn, the more you will be able to offer to others. Encourage people to be open about their fears as well as their expectations.

Challenge: Some potential trainees are not aware of where their training needs lie, and what possibilities there are for training. Often, discussions about training needs are dominated by certain powerful groups, e.g. rich farmers, male farmers, at the expense of poor farmers and women farmers.

Response: As a trainer, you are in a position to give some concrete inputs and advice. This is your job after all. Nevertheless, your inputs must suit the local context and the needs of the learners. You need to understand these before your own inputs can be of value. You should master some basic methods and tools, which will help you to find out what is needed (see Part II, topic 3 - Training Needs Analysis). As you begin to understand the situation better, you may decide to bring different groups together at different times, to avoid domination by some groups over others.

Putting PCD into practice

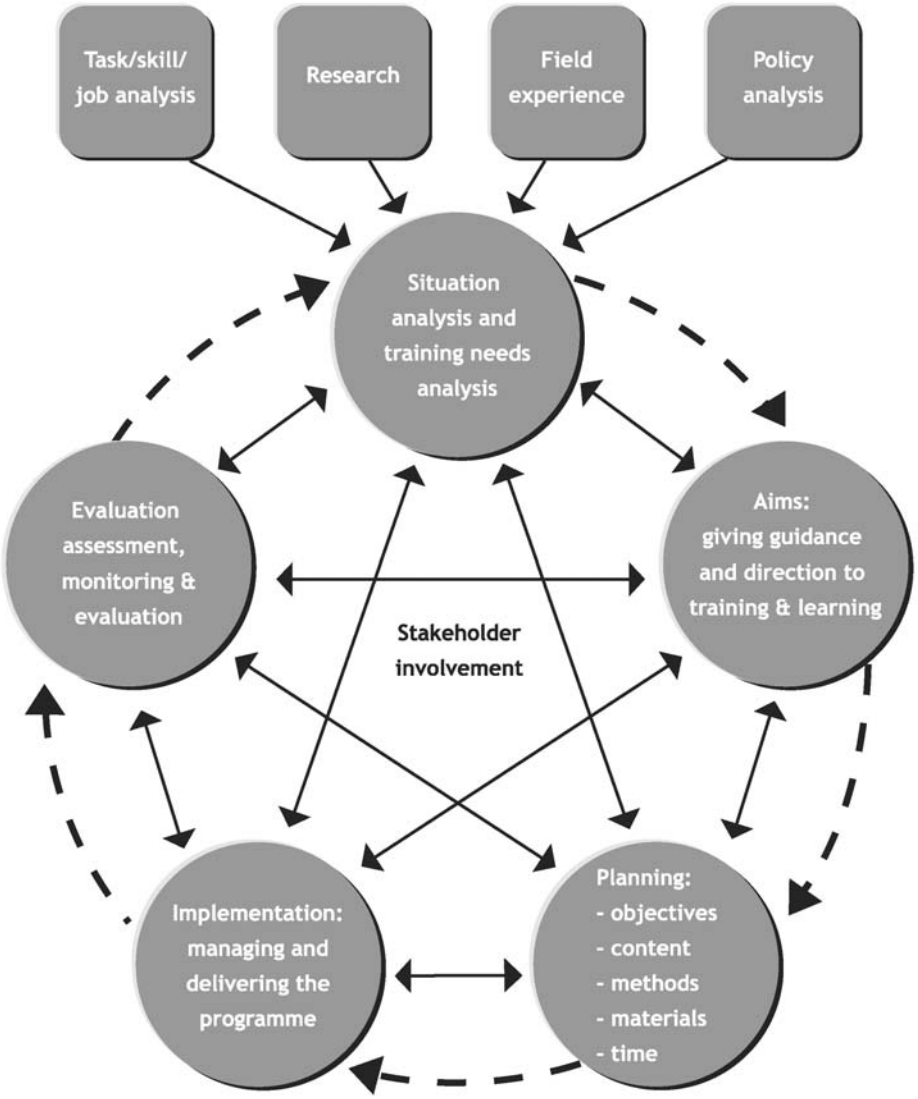
In this part, we have mentioned the importance of developing principles, theories and strategies to guide you in your use of a PCD approach. In Part II, we shall look in detail at how to put PCD into practice. To help you, here is a framework that shows the different steps involved in the participatory curriculum development process. It is based on the basic **'training cycle'** which is often used for course design and on a version of Skilbeck (1984), which emphasized the importance of carefully analysing the situation where curriculum development takes place. This framework will help you because it does two main things. It contains a series of steps you can follow, and it shows that participatory curriculum development is a cycle, which keeps going. The broad arrows around the outside of the cycle show the direction in which it normally goes. Typically, you start by analysing the local situation, then move through the stages of planning, detailed course design, implementation and evaluation. The smaller arrows inside the cycle show that all the stages are related to each other. If one part changes, you may need to adapt the other stages as well. In the centre of the cycle is the important focus on stakeholder involvement, in all the different stages.

Now that you have read this part, you will be aware of the many advantages, as well as some of the challenges, of using a PCD approach. The key points from this part are summarized below in bullet form. You may find this helps to remind you of

some important issues, and you could use this list of points if you are providing a PCD awareness-raising event for your colleagues or course participants.

However, what you have read has its real value when applied in reality. In Part II, this Toolkit presents some detailed descriptions of methods, tools and tips, which you will find helpful as you put PCD into practice. Further sources of information and guidance can also be found in Part III; these may be particularly useful as you begin working in your own specific context.

The PCD Cycle



Summary of key points

What do we mean by curriculum development?

- Curriculum development is central to the teaching and learning process, because it guides the way in which learning is facilitated.
- It includes all the planning and guiding of learning by a training or teaching organization, inside or outside a classroom, in an institutional setting or in a village, a field or a forest.

Traditional approaches to curriculum development:

- Often follow a content-oriented approach.
- Are curriculum based on a list of content, usually knowledge.
- Are made by a planner, an expert, and sometimes by the trainer.
- Are usually theoretical, academic, discipline based.
- Provide no guidance on how learning can be facilitated.

A different approach:

- To increase the effectiveness of training, when designing a course, consider both the product or outcomes, as well as the process by which the outcomes are achieved.
- Aim to make the entire curriculum development process as participatory as possible.

How can curriculum development be more participatory?

- With a participatory approach to curriculum development (PCD), the process is more dynamic, and involves all relevant stakeholders (such as students, trainees, teachers, officials, farmers and local people) in a meaningful way.
- The curriculum reflects the goals of different stakeholders, and provides guidance on the experiences needed for achievement of these goals.

Why use a participatory approach?

- It offers greater opportunities for discussion and reflection with different stakeholders - learning together and working more effectively.
- It brings the possibility to form links and networks which allow information-sharing and increase relevance.

- Groups and individuals who do not normally have a 'voice' (e.g. women, poor people, or children) may become included in negotiations and dialogue; they will benefit more as a result of the training.
- It allows the establishment of a dynamic course design process as new linkages and lines of communication are set up, resulting in greater satisfaction with training programmes.
- Different stakeholders can gain greater responsibility for various stages of the curriculum development process; this increases the motivation and commitment of everyone who participates.
- Training will be more effective, and the benefits (the learning which takes place, and the change in behaviour which results) will be more sustainable.

Participatory course design requires:

- Collaborative decision-making mechanisms.
- Participatory approach throughout the entire process.
- Identification of needs and interests of key stakeholders.
- Flexibility to find different solutions which meet different and emerging needs.
- Establishing a common vision for curriculum development.
- A continuing learning process, which is regularly monitored and evaluated.

Principles and challenges of a participatory approach to training and learning:

- The curriculum development process does not have to be dominated by one group or individual. How do you establish joint-leadership (accepting that someone will need to make the final decisions)?
- Everyone looks at the world differently. How can you respect these different views, and find out where your views coincide with the views of others?
- All stakeholders in agroforestry training and learning, both insiders and outsiders, have something to contribute to the process. How can you help them make their contribution most easily and effectively?
- Each person makes his/her own knowledge of education and agroforestry; there is no one 'knowledge'. How can you respect the different types of knowledge and experience of others?
- Participation is active, and involves different people practising, or 'learning by doing'. As a result of participating, a person's knowledge will change. How will this change be understood and evaluated?

- As well as learning agroforestry through their knowledge and practice, different stakeholders hold different values, attitudes and beliefs. How can you understand these, and take them into consideration when you share ideas with others?
- Every context or local environment will be different; no two situations are identical. Most are complex, especially in relation to agroforestry systems. How can you accept, understand and build upon the characteristics of each situation?

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Part II: topic 1
Adult learning – theories and concepts

Fast track

Key Resource Materials

Adult learning – theories and concepts

Learning outcomes

After going through this topic, you will be able to:

- Describe the key concepts and characteristics of adult learning.
- Identify the main roles of the trainer.
- Apply the experiential learning cycle in your own design of training courses.
- Ensure that your training courses meet the needs of learners with different learning styles.
- Use effective learning strategies in your training courses.

Training strategies

Before we can go into detailed issues about course design, delivery and evaluation, it is vital to first consider how and why learning takes place, what makes learning effective, what may block effective learning, and how you can, practically, facilitate the learning process. This topic focuses especially on adult learning, and will help you to develop a conceptual framework for your agroforestry training activities in the future. It is quite theoretical, deliberately, because an understanding of theory is vital for good practice. More sources of information on the theory of learning are included in the reference section at the end of this fast track.

Adults learn best through experience, being given the possibility to reflect on this experience, and then taking some appropriate action. You should ensure that your own training methods follow this principle, whatever you are teaching, whether it is a technical or a methodological training course.

If you are training future trainers, this topic is very important for the participants in your course. Do not be tempted to read out the theoretical key resource materials which follow this fast track – these can be given to participants to read in their own time. You may want to raise some key points from the key resource materials as you go through the topic, however.

Key content

What is learning?

- Learning is something which takes place within the learner and is personal to him or her.
- Learning takes place when an individual feels a need, puts forth an effort to meet that need, and experiences satisfaction with the result of the effort.

Tip for trainers:

Develop a personal theory of learning and teaching. A sound understanding of theory is vital for good practice.

Characteristics of adult learning

Adult learning is different from child learning – '*Androgogy'*, not pedagogy.
It requires:

- facilitation not indoctrination
- learner-learning, not teacher-teaching.

Tip for trainers:

Use these characteristics as the basis for the design of learning programmes.

Role of the trainer

Learning rather than *teaching* should be the guiding principle for the educator. The role of the educator is that of a fellow learner with a special role - to become a facilitator of self-directed learning. Adults want to be able to position the offered knowledge and skills in the context of their experiences. They can learn from each other's experiences and they need interactive training methods (open communication between facilitator and participant, and among the participants).

Tips for trainers:

- Master the subject of training.
- Respond in a flexible and respectful way to specific needs of the learners.
- Handle the programme in a creative and flexible way.
- Learn along with the participants.
- Guide, coach and support where necessary.

- Understand learning theory in order to practise effectively.
- Discover the perspective of the learner and the learning context.
- Decide on the most suitable approach.
- Choose and use appropriate methods.
- Monitor and evaluate progress.

The experiential learning cycle

The experiential learning cycle provides a framework for adult learning. It is based on the theory that real learning follows a continuous progression of experience-reflection-action.

- Experience: learners acquire new KSA (Knowledge-Skills-Attitudes) and seek out new information to support the experience.
- Reflective observation: learners process the information by reflecting on the experience.
- Generalization: learners think about how their new KSA relate to their own context, situation, and existing KSA.
- Active experimentation: learners apply what they have learned in the real context - this becomes a new experience.

Tips for trainers:

- Provide relevant experiences and information; ensure the learners are actively involved.
- Help the learners reflect through individual or group exercises.
- Help learners to structure and verbalize their new knowledge through questioning, probing, discussing.
- Help learners to try out new skills, solve new problems, test out their new knowledge in reality.

Learning styles

Different people have different learning styles.

- Active learners: 'jump in and do it immediately'.
- Reflective learners: 'wait and see, then try it'.
- Theorizing learners: 'understand basic principles; logical; objective'.
- Experimental learners: 'don't believe it until I've tried it; problem-solvers'.

Tip for trainers:

For different topics or activities, start sessions at different points of the experiential learning cycle to help individuals with different learning styles.

Practical suggestions for teaching and learning

Drawing on adult learning strategies and the recognition that trainees have different styles of learning, a few practical suggestions for the design of learning and teaching programmes are presented below:

Tips for trainers:

- Build up and enhance learning techniques of learners.
- Start with specific issues, then move from the concrete to the general.
- Use small, manageable pieces of learning.
- Use an appropriate range of learning methods and materials.
- Try to use participatory learning and discovery learning approaches whenever possible.
- Encourage understanding, not memorizing.
- Provide opportunities for imitation.
- Allow learners to practise as soon as possible.
- Make it possible for learners to use their own style of learning.
- Allow learners to organize their own learning.
- Ensure that the learning does not stop at the end of the course.
- Leave the learners feeling that they want to learn more, and that they can continue on their own if necessary.

If you are training trainers, then the following strategies will be useful:

1. Begin by asking course participants to reflect on their own learning experience, identifying important personal learning, and describing the learning process they experienced.

2. Brainstorm on how adults learn with the following questions:

- What are the differences between the way adults and children learn?
- What are the implications for the design of training programmes?
- What are the implications for the delivery of training programmes?

3. Present the experiential learning cycle, using a large flipchart and cards with the different stages of the cycle. Build it up visually (see page 57). Provide the theoretical background to the concept of experiential learning.

4. Provide an example of learning with which most participants will be familiar, e.g. 'riding a bicycle'. Ask participants how they learned to do this. Try to identify different approaches that participants used to learn this skill. Relate this to the four learning styles. Add these learning styles, using cards, to the experiential learning cycle chart.

5. Ask groups to identify strategies they have used or are aware of when training adults. What has worked well and what does not work well? Build up a series of 'dos' and 'don'ts' of adult learning practices on a flipchart. Provide other examples if required.

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What is adult learning?

Principles of adult learning

Adults learn in a different manner than children. The science of educating children is *pedagogy*. Although children learn constantly, naturally and intuitively, they depend on teachers and society for what they need to learn in a structured way. According to pedagogical theory, education methods for children should follow their development stages. According to popular theory, children more or less follow similar stages of development, according to their ages. The education/school curricula are designed to be suitable for the majority of children at particular stages of age-related development.

Andragogy, a term coined by Malcolm Knowles (1980), is the scientific field of educating/training adults. Adult learners bring with them a wealth of experience. They 'formulate' their own learning needs, based on their own perception of what they need, and they have an innate desire to be independent (from a trainer) in doing so. The role of the trainer is to create awareness on certain gaps in knowledge and skills, facilitate the verbalizing of the needs, bring structure in the training needs and provide information on training possibilities. In mutual responsibility, trainer and trainee decide not only on the contents of a training programme, but also on how that content is taught. In other words, trainer and trainees are joint participants, but with different roles and responsibilities, in a learning process.

While learning, adults need to constantly refer back to their practical experiences and review how the newly acquired knowledge fits in. Training programmes for adults need to provide opportunities for this. The role of the trainer in adult education can be summarized as 'helping the adult learner to learn' (Knowles 1980), or to *facilitate* learning. We can think of learning as a change in behaviour, based on knowledge, skills and attitudes (KSA). Careful planning is crucial for a successful adult education programme, in which assessment of training needs is a first and very important step The communication between trainer and trainee should be open and based on mutual respect. This is important because change is not always desirable. There are many unfortunate cases where powerful groups have decided to

bring about change, which was not desired by other, less powerful groups and individuals. Understanding training needs, as we will see later, is of vital importance in the learning process.

In many training programmes for adults, the trainer decides on the contents, and the principal training method is lecturing, occasionally accompanied by a demonstration. This approach is based on the false belief that learners are rather like empty vessels, which need to be 'filled up' with knowledge.

Freire (1976) recognized the inadequacy of this approach and called it 'banking' of knowledge - storing up knowledge in the minds of learners for the future. It encourages learners to memorize facts and to learn information by rote. Unfortunately, this type of 'learning' is short-lived and the learner retains very little of the information. Learning has not really taken place at all.

Facilitating learning in adults requires much more from the trainer than being simply a source of information. An effective trainer of adults will have to develop a training programme and identify and use methods, which meet the specific needs of the learners. It is essential that the trainer is capable of doing the following things:

- Absolutely master the content of the training (which is not always easy in a complex multidisciplinary field such as agroforestry).
- Respond in a flexible way to specific questions/needs from the trainees.
- Handle the programme in a creative and flexible way.

The advantage of this approach is that the training has a higher chance to be successful. The trainees feel respected, and are therefore more highly motivated. By adopting a participatory approach to the entire training process, through needs identification, planning, implementation and evaluation, the trainer enters into partnership with the trainees as well as with other stakeholders. The learners become owners of the learning process, and the training programme is adapted to their specific needs.

Knowledge and information

At this point, it is important to clarify some terms and to spend a little time on two very important and rather confusing terms - knowledge and information. (A glossary of key terms can also be found on page 14).

Schools of thought about knowing

Theories of knowledge, and the way in which knowledge is examined, interpreted and understood may depend on the perspective of the individual person. This perspective refers to that person's belief in a set of rules, values or theories. When investigating knowledge and the nature of knowledge, individuals will use an approach that is based on the perspectives they hold. This approach will give rise to the use of appropriate methodologies, or sets of methods, arranged in a sequence depending on the approach adopted.

One theoretical perspective, for example, is that knowledge exists as an object and can be objectively observed and classified. This perspective is known as 'positivism'. Positivists see the use of scientific methods as highly desirable, and favour quantitative descriptions of events. A trainer who has adopted a 'positivist' perspective would therefore be more likely to use a quantitative approach when trying to investigate the existing knowledge of a group or of an individual, and utilize methods such as questionnaires or structured interviews when identifying training needs.

An alternative and very different theoretical perspective is based on the idea that knowledge does not exist in an objective, quantifiable form, but that a learner actively constructs both the knowledge acquired and the strategies used to acquire it. From this 'constructivist' perspective, it appears that there is no one 'knowledge', since it is constantly changing and evolving. Knowledge is different not only between individuals, but also within an individual from one moment to the next. A trainer who has adopted a constructivist perspective would be more likely therefore to adopt a qualitative approach when trying to investigate the existing knowledge of a group or of an individual, and use methods such as semi- or unstructured interviews, or observations when identifying training needs.

Concepts of knowledge

The concept of 'knowledge' is very complex. There are several different ways of knowing. Knowing people is different from knowing things or truths, and these again are different from knowing oneself. Academic knowledge (book knowledge) is often different from practical or experiential knowledge.

Not all knowledge is held with the same sense of certainty, and may need to be tested further. The distinguishing line between a theory and knowledge is very thin. We may think we know something, but we cannot be sure until we have tested it out in practice. Even strongly held knowledge turns out only to be a belief when it runs against contrary experience. Knowledge which has been tested time and again against experience will be held firmly. This is why the experience of adults is so vital in the learning process. Experience, therefore, is a vital part of knowing. Practical experiential knowledge is different from 'head' knowledge or 'book' knowledge. Some people think that one has only effectively learned something when one has practised or used the knowledge, not when one can recite the knowledge (Rogers and Taylor 1998).

Types of knowledge

Some scientists who hold a 'reductionist' perspective (which means that everything that exists in the world can be reduced or broken down into smaller parts and analysed) believe that knowledge can be isolated and examined objectively. For this reason, pure scientific knowledge is often considered as a higher form of knowledge than applied science; practical or technical knowledge is thought to be of an even lower form. 'Experiential' knowledge, for example the knowledge of poor farmers who have never attended school, or the knowledge of young children, may be dismissed altogether as irrelevant.

Bawden (1990) suggests that there are three types of knowledge; knowing for the purpose of knowing, knowing for the purpose of doing, and knowing for the purpose of being. This last type of knowledge, sometimes called, 'praxis', or 'learning to be', is a very important concept. It moves beyond thinking of knowledge as something which exists as an object. Instead, knowledge is treated as something which is created by every individual, and must therefore be treated as unique to each person. This means that it is impossible for us to think of knowledge as an examinable object, existing as a distinct entity. The reality (if such a thing exists) is

much more complex. In fact, we might say that there are an infinite number of knowledges, since the knowledge of each individual will be different. These concepts may seem abstract, but they are of vital importance to a trainer, because it is by understanding the nature of knowledge that learning can be facilitated effectively in groups and individuals.

As Röling and Engel (1991) state:

'Knowledge occurs between the ears, a property of the mind. It cannot be heard, seen or touched...People use knowledge to operate in the real world. They build theories that attribute causes to effects and apply these to control the environment for their purposes. If things do not turn out as predicted, they adapt their knowledge or ignore the real world to avoid inconsistency. Knowledge utilization is a mechanism for survival.'

Knowledge, from this perspective, cannot be transmitted; it is the personal property of an individual.

Rural peoples' knowledge

For many years, it was thought that scientific knowledge was 'correct' and was the answer to solving the 'problems' of rural people, as perceived by those outside the rural communities. Scientists and experts decided on a solution to a problem, normally through research, and attempted to persuade farmers to change their practices through extension. This approach was often termed 'transfer of technology'. More recently, since the late 1970's the emphasis has been transferred towards the farmer as a possessor of 'Indigenous Technical Knowledge', or ITK as it is commonly known.

'Proponents of this populist approach emphasize the rational nature and sophistication of rural people's knowledge and believe that knowledge can be blended with or incorporated into formal scientific knowledge systems.'

(Scoones and Thompson 1994)

There is now a movement beyond this, which has occurred because of the realization that knowledge is of an individual construction and is dependant on the relationships between individuals in a society and the knowledge they possess.

Therefore, the term 'rural people's knowledge' (RPK) has been coined:

'...in recent years this perspective (ITK) has been expanded to consider indigenous knowledge as cultural knowledge, producing and reproducing mutual understanding and identity among the members of a farming community where local technical knowledge, skills and capacities are inextricably linked to non-technical ones (i.e. cultural , ecological and sociological factors). In this way, 'ITK' becomes 'RPK'.

(Scoones and Thompson 1994)

This movement from a 'farmer first' approach to 'beyond farmer first', therefore takes into consideration that one type of knowledge does not exist in isolation, but rather as a very complex system. This has been termed a 'knowledge and information system' or KIS (Röling and Engels 1991).

Information

Röling and Engel (1991) define information as:

'sensory input that maintains or improves the goodness-of-fit between knowledge and the real world. On the one hand, information is explicit, visible, touchable, hearable and this is transferable. It consists of matter and energy. On the other, information assumes that a receiver can impose a pattern upon this matter/energy so that it takes on meaning and makes sense. Information, therefore, is more than data or mere sensory input. It also implies an interpretable pattern. Information must not only anticipate its receiver's ability to interpret it, but, to be informative, it must also anticipate upon an existing discrepancy between the receiver's knowledge and the environment. Deliberate information provision through communication must pay considerable attention to anticipation.'

According to their concept, information plays a key role in the construction of knowledge, and the way in which individuals relate to the world. Information may change their view of the world, and hence cause them to 'reconstruct' their knowledge.

Information can be introduced externally to community members in several different ways such as through personal communication, group activities, and mass media. Traditional extension approaches, particularly 'transfer of technology', focus on the presentation of technological information in the hope that people will be persuaded to adopt it. This view of the role of information has now been re-addressed, recognizing that many potent sources of information actually originate within rural communities. This idea is reinforced by the fact that information is transferred internally in every society through a wide range of means, some intentional and some incidental.

Alternative views of knowledge and information

Leeuwis, Long and Villareal (1991) find three problems with the concept of knowledge being the 'property' of the individual, the total of which may add up to a sum of knowledge in a community, functioning in a systematic way.

Firstly, they argue that knowledge is a social construct; 'knowledge processes can only be properly understood if one recognizes their socially-constructed and emergent character'. This means that knowledge should not be differentiated into 'types', but will by nature be of a social construction, 'jointly created through encounters between knowing and active subjects'.

Secondly, they suggest that knowledge and information are not separable, as 'both are in fact elements of a single interpretative process, since information has no meaning if it cannot be internalized, and by being internalized, it becomes part of a stock of knowledge'. It is not enough to regard knowledge or information as a body of individual cognitive construction, or made up of items of data that can simply be transferred from one person or another.

Thirdly, it is put forward, that there is no 'real world', which exists and can be observed as a distinct entity by an observer, since the interpretation and perception of any situation will depend on the sets of subjective perceptions and evaluations of particular social actors, and potentially conflicting social and normative actors. Knowledge is only meaningful when the 'agency' of actors is considered, i.e. what they do in the particular social context in which they operate.

Power structures in a community also become of very great importance because of the complex networks of different actors and institutions, knowledge transmission varies throughout these networks. Scoones and Thompson (1994) state that '*knowledge is not evenly distributed*'.

The debate about knowledge will (and should) continue in the future. One example of current thinking about knowledge is formulated by Röling (2000).

'The exciting thing that is happening is that a totally new additional area of science professionalism is emerging. This professionalism is based on the assumption that 'knowledge is effective action in the domain of existence' (Maturana and Varela 1987), and not the accumulation of a store of objective truths. When it comes to designing effective action in the domain of existence, pure science has an important role, but in addition, we have to deal with people's objectives and opinions as 'extended facts' (Funtowicz and Ravetz 1993), and with shared cognitions, intentionality, and institutions as essential design ingredients. In such design, people are not objects that can be instrumentally or even strategically manipulated. They must participate. The design must be interactive'

Learning

In the discussions above, we have been thinking about what knowledge is, its relationship to other aspects of a knowledge system, i.e. information, and innovation. We have debated about whether there is such a thing as a knowledge system, or whether knowledge is a social construct which cannot be systematized. In doing this, we have actually been trying to 'know' knowledge. It does not matter that there are no clear-cut answers; the important issue is to ask 'What processes are taking place?' and 'What do I know about these processes'. We have also been asking, as individuals, 'What do I know about knowing?' and, hopefully, 'What can I do to examine the way I think about what I know and make it more effective?'

Learning models

The implication of all this for learning, is that learning is not a simple activity! And just as there are different views of knowledge and knowing, there are different views of learning.

One model for learning is comprised of three levels:

Cognition: individuals compute, memorize, read, etc.

Meta-cognition: individuals monitor their own progress while engaged in cognitive tasks.

Epistemic cognition: individuals reflect on the certainty of knowing and criteria of knowing.

Bawden (1990) thinks of these different levels as learning 'loops', where a double loop consists of two orders of learning, method and methodology. For any situation, the focus of an inquiry is the first order loop. For example, how is information passed between people living in neighbouring villages? The second order loop is to ask, how will we inquire about this question? What procedures are we using? Why? etc. Learners who move into this second order of the double loop, or who address their learning at the level of epistemic cognition, become what Schon calls a 'reflective practitioners'.

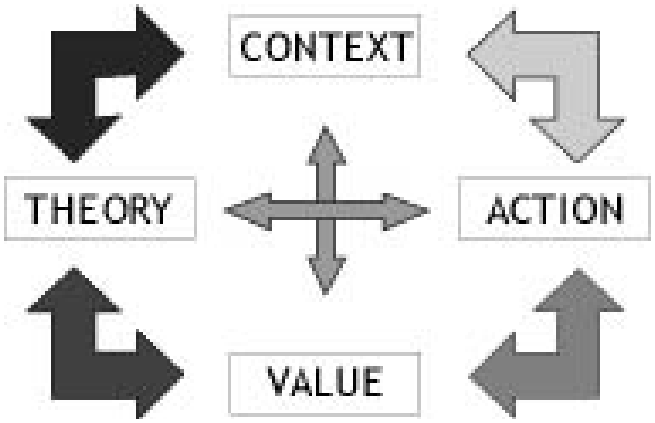
According to Bawden, in the first order loop we must learn to:

- Involve ourselves directly and fully in experiences.
- Investigate these experiences from as many different perspectives as possible.
- Pattern our observations into meanings, theories or interpretations as a basis for informed action.
- Put these theories into action for testing for change.

In the second order loop we must learn to question:

- the relevance of our methodology and the questions we are asking,
- the characteristics of our own world view,
- the way we are thinking, patterning and construing,
- the processes by which we make theories, and the theories which others have about thinking and making theories,
- the reflection on the way we are going about our learning.

More recently, Bawden (2000) has developed a view of systemic, or holistic learning, illustrated as follows:



From this viewpoint, a learner, at any point in time, has a set or sets of values, and holds certain theories. Any action taken by the learner will be based on these theories and values, but also influenced by the context. Once an action has been taken, the values of the learner may shift, as a result of the experience, and he or she may generate new theories. At the same time, the context itself will be changed as a result of the action. This view creates tremendous possibilities for trainers to facilitate learning, but at the same time increases the responsibility of the trainer, especially in the need to understand as much as possible about the learning process. From this discussion, it should now be clear that since there is no single 'correct' view about knowledge and learning, it is vital that the trainer does reflect carefully and consciously on his or her theories and values. Without this personal 'double-loop' learning, based upon the principle of reflecting on experience, it will be very difficult to influence the learning of others.

Learning styles

All learners are individuals, and different individuals may have a different style of learning. There are four main styles of learning:

- Active learners: 'jump in and do it immediately'.
- Reflective learners: 'wait and see, then try it'.
- Theorizing learners: 'understand basic principles; logical; objective'.
- Experimental learners: 'don't believe it until I've tried it; problem-solvers'.

When working with a group, it is likely that several or all of these learning styles are represented amongst the trainees. A trainer must make every effort to get to know the trainees as individuals, in order to understand how to facilitate their learning most effectively. Of course this is not always easy, especially in short courses. An alternative strategy is to vary the training methods, so that each learner has an opportunity to learn in the style which is most suited.

Drawing on adult learning strategies and the recognition that trainees have different styles of learning, a few practical suggestions for the trainer of adults are presented in the box below.

Some practical suggestions for the trainer of adults:

- Build up and enhance learning techniques of learners.
- Start with specific issues, then move from the concrete to the general.
- Use small, manageable pieces of learning.
- Use an appropriate range of learning methods and materials.
- Try to use participatory learning and discovery learning approaches whenever possible.
- Encourage understanding, not memorizing.
- Provide opportunities for imitation.
- Allow learners to practise as soon as possible.
- Make it possible for learners to use their own style of learning.
- Allow learners to organize their own learning.
- Ensure that the learning does not stop at the end of the course.
- Leave the learner feeling that they want to learn more, and that they can continue on their own if necessary.

Conclusion

Almost 20 years ago, Knowles (1980) outlined a number of issues that are still important for adult learning today. In modern society, it is not enough to 'produce' knowledgeable people. Indeed, as we have seen earlier, the constructivist approach is based on the principle that knowledge is constructed by the individual, and so the trainer is not in the position to 'fill up the empty heads' of the learners. Competent people are needed, so education should focus on 'skills', rather than on knowledge alone. *Learning* rather than *teaching* should be the guiding principle in education. The role of the educator is that of a fellow learner with a special role - to become a facilitator of self-directed learning. Learning is recognized increasingly as a lifelong process, and adults are able to continue learning through courses, seminars, workshops, and other types of experiences such as visits, study tours, research activities and so on. The adult learner is regarded as self-directed, bringing a broad range of experiences, and wants to complement the existing knowledge/skills in order to meet identified and felt needs. Adults want to be able to position the offered knowledge and skills in the context of their experiences. They can learn from each other's experiences, and they need interactive training methods (open communication between facilitator and participant, and among the participants) and a safe learning environment.

To summarize:

Principles of effective learning

- **shared responsibility** (trainer and adult learner) for the contents of training (participatory training needs assessment)
- **problem-oriented** rather than content-oriented (applied, not theoretical training)
- ample opportunities for **reflection** on new knowledge (through group discussions, special exercises), **and reference to the own experiences**
- **participatory and interactive** training methods (case studies, practicals, discussions, group work, etc.)
- **learning from each others' experiences**
- **safe, respectful environment**

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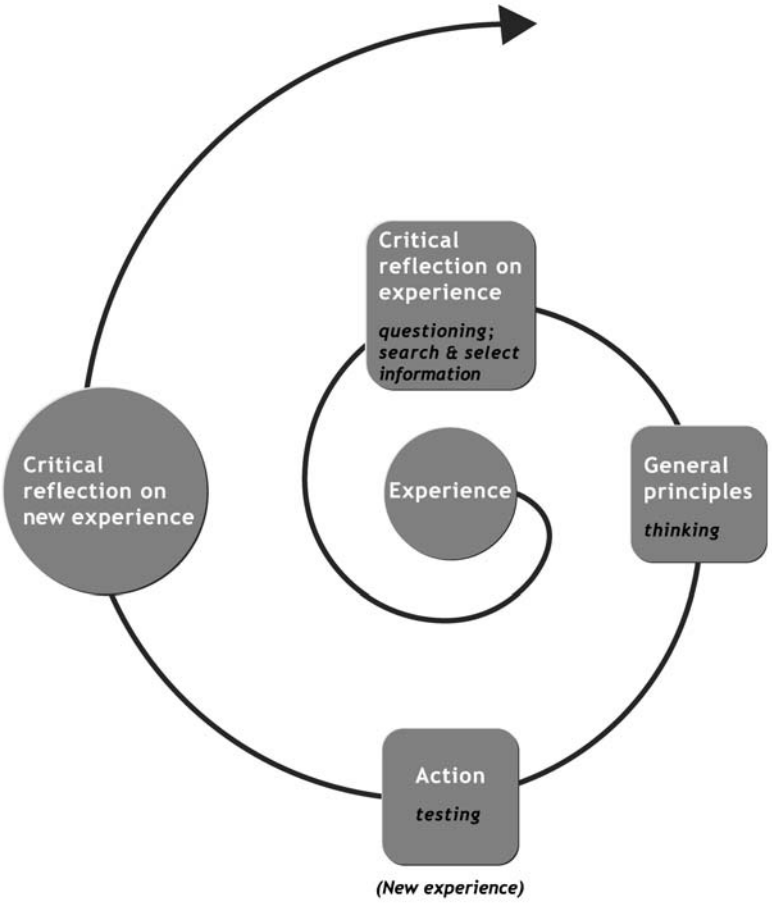
The Experiential Learning Cycle



The Experiential Learning Cycle supports the ideas described above on adult learning. It was developed by Kolb (Kolb 1984), and is still used widely (Kolb et al. 1995). Kolb defines learning as 'the process whereby knowledge is created through the transformation of experience'. As the diagram shows, there are four stages in the learning process, which are then re-entered as the cycle continues. For each stage of the cycle, there are different implications for teaching and learning.

Stage of the Cycle	Description	Implications for teaching and learning
Experience	Learners acquire new knowledge, skills or attitudes; this stage may also involve the learner actively searching out and selecting additional information to support the experience.	Learners engage with a new situation; this can be provided through a formal teaching session (lecture, presentation, demonstration, film, computer-generated activity), through participatory learning methods (role-play, games, simulations), by field-trips, visits etc.
Reflective observation (questioning)	Learners process the information by reflecting on the experience.	Learners reflect through individual exercises, group discussions, case study analysis, etc.
Generalization (thinking)	Learners think about how their new knowledge and skills relates to their own context and situation, and can be applied in other situations.	Learners structure and verbalize their new knowledge, and answer questions such as 'what does this knowledge mean to you; how will it affect your performance; how will you apply it and in what way; what do you feel about this learning; how have your values changed?'
Active experimentation (action/doing)	Learners apply what they have learned in the real context - this becomes a new experience and the cycle again continues with further reflection, generalization and action.	Learners try out new skills, or attempt to solve real problems with their newly developed knowledge, for example through field work, practical exercises, etc.

(Taylor 2003)

Exercise for reflecting on the experiential learning cycle

The experiential learning cycle is a very useful element to introduce in a training of trainers course. Sometimes, however, it can seem rather abstract, especially if the concept of experiential learning is new to participants. The following exercise can be very useful, giving an opportunity for participants to consider how they learn themselves, how they think about learning, and how they use these strategies to plan and carry out their own training activities. The exercise itself follows the main steps of the experiential learning cycle, which is worth pointing out in a debriefing at the end. Normally you should allocate half a day, or about 3 hours, for this exercise to be done fully.

Exercise (3 hours)

1. Begin by asking course participants to reflect, individually, on their own learning experience, identifying important personal learning, and describing the learning process they experienced. Use the following questions (participants should write down their answers on a piece of paper):

   - Think of something important in your life that you have learned.
   - Why did you need to learn it?
   - How did you learn it (attending a course, reading, observing, trying it out in practice)?
   - What do you think now about the way you learned it? Could you have learned it in a different way, and if so, how? What could have improved the learning process?

After about 20 minutes of individual reflection, ask participants to share their responses with the person sitting next to them (10 minutes for this "buzz" session). Then ask participants to quickly share in plenary any important points they have learned through this reflection (20 minutes).

2. Brainstorm (20 minutes) on how adults learn with the following questions:

- What are the differences between the way that adults and children learn?
- What are the implications for the design of training programmes?
- What are the implications for the delivery of training programmes?

3. Present the experiential learning cycle, using a large flipchart and cards with the different stages of the cycle. Build it up visually. Provide the theoretical background to the concept of experiential learning (20 minutes).

4. Provide an example of learning with which most participants will be familiar, e.g. 'riding a bicycle'. Ask participants how they learned to do this. Try to identify different approaches that participants used to learn this skill. Relate this to the four learning styles. Add these learning styles, using cards, to the experiential learning cycle chart (30 minutes).

5. Form groups, and ask them to identify strategies they have used or are aware of when training adults. What has worked well and what does not work well? (30 minutes).

6. Have a feedback session from groups in plenary. Build up a series of 'dos' and 'don'ts' of adult learning practices on a flipchart. Provide other examples if required. (30 minutes).

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Part II: topic 2
Stakeholder analysis

Fast track

Key resource materials

Stakeholder analysis

Learning outcomes

After going through this topic, you will be able to:

- Describe the benefits of involving stakeholders in training course design.
- Undertake the process of stakeholder analysis.
- Involve stakeholders at different phases of the course design process.
- Increase ownership of training programmes by relevant stakeholders, resulting in more successful training outcomes.

Training strategies

Stakeholder analysis is a very interesting subject and is often a very popular training topic if you are training trainers. However, care should be taken to avoid carrying it out in a superficial way. As with all analysis, the more deeply it is done, the better will be the quality of the result. If you are using stakeholder analysis yourself, in order to ensure wider participation in your own training course designs, try to work with a small group of colleagues or friends throughout the process. Creating a small 'learning group' is a good way to increase the quality of reflection on the way you are working.

If you are providing training to future trainers in stakeholder analysis, first give an overview of what it entails, then explain each step very carefully, and give enough time for participants to practise each step (usually in small groups) before going to the next one. At the end, ensure there is enough time for a debriefing with all participants in a plenary session. In a training session, a stakeholder analysis may be done 'for real' or in an 'imaginary setting'. As a trainer, you will need to help participants focus on the depth and quality of the outcomes of the exercise. Also try to keep a record on flipcharts, cards, etc. of points that come up in the discussion during the analysis; these are often as important as the actual analysis itself. You will need a fairly extensive collection of coloured cards and stationary for this.

Key content

What is stakeholder analysis?

- The identification of the key stakeholders in the process of training course design, an assessment of their interests, and the way in which these interests are likely to affect the process.
- A stakeholder analysis aims to ensure that objectives are achieved, and that an activity will be sustainable.

Why do a stakeholder analysis?

- To draw out the interests of stakeholders in relation to the training need being addressed (the 'why factors').
- To identify conflicts of interest.
- To identify relations between stakeholders which can be built upon.
- To assess the appropriate type of participation by different stakeholders at different stages of the curriculum development process.

How to do a stakeholder analysis

1. Identify the basic question. E.g., 'who are the stakeholders in a training programme on tree domestication?'
2. List the stakeholders.
3. Group them into outsiders and insiders.
4. Identify their interests in the training (expectations, benefits, resources offered, withheld; i.e. why are they stakeholders?).
5. Identify the relationships between different stakeholders.
6. Do they have common or conflicting interests?
7. Are they closely related or not?
8. Analyse the relative importance and influence of each stakeholder.
    - For importance, we think about the level of satisfaction of the needs or interests of each stakeholder through our training (client relations).
    - For influence, we think about the level of the effect of a stakeholder on our training (power relations).
9. Identify the potential role of each stakeholder in the PCD process in terms of their contribution and also the level of their participation;
    - to be informed
    - to be consulted

- to be in partnership
- to be in control.

Tips for trainers:

Follow these steps carefully, giving enough time for each step.

- Visualize all the outcomes of each step.
- Make links between the steps.
- Listen to/observe interactions between participants engaged in the analysis; these are also very useful.

Recommended reading

IIED. 2001. *Stakeholder Power Analysis.* London: IIED.

Rogers A and Taylor P. 1998. *Participatory Curriculum Development in Agricultural Education. A Training Guide.* Rome: FAO.

Rudebjer P, Taylor P and Del Castillo RA eds. 2001. *A Guide to Learning Agroforestry.* Nairobi: ICRAF.

Stakeholder analysis

Introduction

Stakeholder analysis is the identification of the key stakeholders in the process of training course design, an assessment of their interests, and the way in which these interests are likely to affect the process.

We carry out a stakeholder analysis for several reasons:

- To reveal the interests of stakeholders in relation to the problem being addressed (the 'why factors').
- To identify conflicts of interest.
- To identify relations between stakeholders which can be built upon.
- To assess the appropriate type of participation by different stakeholders at different stages of the curriculum development process.

Stakeholder participation enables stakeholders to play an active role in decision-making and in the consequent activities which may affect them, leading to:

- objectives that are more likely to be achieved,
- activities that are more likely to be sustainable.

Carrying out a stakeholder analysis

It is good to do a stakeholder analysis fairly early in the process of course design, because it is then possible to involve key stakeholders from the very beginning. It can also help to avoid problems which might otherwise be overlooked. Usually, there will be a small group of persons who are organizing and driving the course design process. This small group, and perhaps some other invited persons, can undertake the first stakeholder analysis. It can be done in a workshop setting, in order to encourage open minds and free thinking. If the group members are familiar with each other, and already have a good working relationship, then one of them can facilitate the analysis. If there is a likelihood of disagreement or dissent, however, it may be good to invite an independent and neutral facilitator to take the group through the process. There may be cost implications from this, however. Following the first stakeholder analysis, it is useful to organize a second workshop

(again, if time and resources allow) to which some of the stakeholders identified are invited. They can then give feedback about their own potential roles, as well as the roles of others. It might also be good to go through the stakeholder analysis a second time with the larger group to validate the first analysis, and/or to add further information about different stakeholders.

Steps in the stakeholder analysis

1. **List the stakeholders.**

   Try to be as specific as possible. For example, avoid naming a stakeholder such as 'The Government', or 'managers'. These are very broad terms.

2. **Group them into 'outsiders' and 'insiders'.**

   (see Part I - PCD page 32)

3. **Identify their interests in the training.**

   (expectations, benefits, resources offered, withheld).

4. **Note any conflicting interests.**

5. **Highlight relationships between stakeholders (-/+).**

   Relationships between stakeholders are often positive in the sense that they lead to constructive processes or outcomes, through complementary activities, inputs or collaborations. Such beneficial relationships may be indicated in a table by using a (+). Sometimes, however, involving different stakeholders may lead to conflict, and create obstacles and constraints. It is important to recognize in advance where this may happen, although such situations cannot always be predicted. Where difficulties are anticipated, strategies to deal with conflict are likely to be needed, the relationship can be highlighted with a (-).

6. **Assess impact of the curriculum development/provision of training on the stakeholders' interests.**

   (i.e. will the training have a positive or a negative effect on their interests?)

7. **Construct a table as below.**

STAKEHOLDERS	INTERESTS OF STAKEHOLDERS	IMPACT OF CHANGE ON STAKEHOLDERS' INTERESTS
Outsiders		
• Extension workers	• Dissemination of agroforestry technologies	+
	• Acquiring knowledge and skills in this area	+
• Farmers	• Improving soil fertility for increased crop yields	+
	• Increased need for labour to establish soil erosion measures	-
• NGOs	• Dissemination of technologies	+
	• Improved livelihoods of communities	+
	• Role as donors (but greater demands for funding)	+/-
• Policy makers	• Guide on policy decision	+
• Community leaders	• Improved community livelihoods	+
• Environmentalists	• Environmental conservation	+
Insiders		
• Students	• Acquiring knowledge and skills on agroforestry for erosion control	+
	• Better chances for future employment	+
• Researchers	• Developing technologies	+
• Trainers	• Imparting knowledge and skills in soil erosion control through agroforestry	+
	• Need to establish technical training capacity (funds and resources)	+/-

Example: Training on agroforestry for soil conservation: classification and interest of stakeholders

8. **Analyse the relationship between different stakeholders, according to their relative importance and influence.**

   Methods for analysing the importance and influence are described below under Importance and influence of stakeholders (page 69).

9. **Develop a stakeholder participation matrix.**

   In this final step, potential roles and responsibilities are assigned to different stakeholders (this must then be followed up with the relevant stakeholders through an event such as a participatory workshop). A table can be constructed as follows:

Type of participation / Stage in cycle	INFORM	CONSULT	PARTNERSHIP	CONTROL (Decision-making)
TNA	Policy makers Community leaders Students	Farmers Environmentalists	Researchers NGOs Extension workers	Trainers
AIMS	Researchers Students Community leaders Farmers	Policy makers	Extension workers NGOs Environmentalists	Trainers
PLANNING	...	...	...	...
IMPLEMENTATION				
EVALUATION				

Example: Training on agroforestry for soil conservation: type of participation of stakeholders in different steps of the PCD process (example partially completed)

Importance and influence of stakeholders

Importance indicates the priority given to satisfying stakeholders' needs and interests from being involved in the design of the training course and in the training itself in order for it to be successful. In other words, how important or essential is it that certain stakeholders are involved? The trainees are obviously a very important group, as are the trainers. But what about other stakeholders? Policy makers? Farmers? Parents? Community leaders etc.?

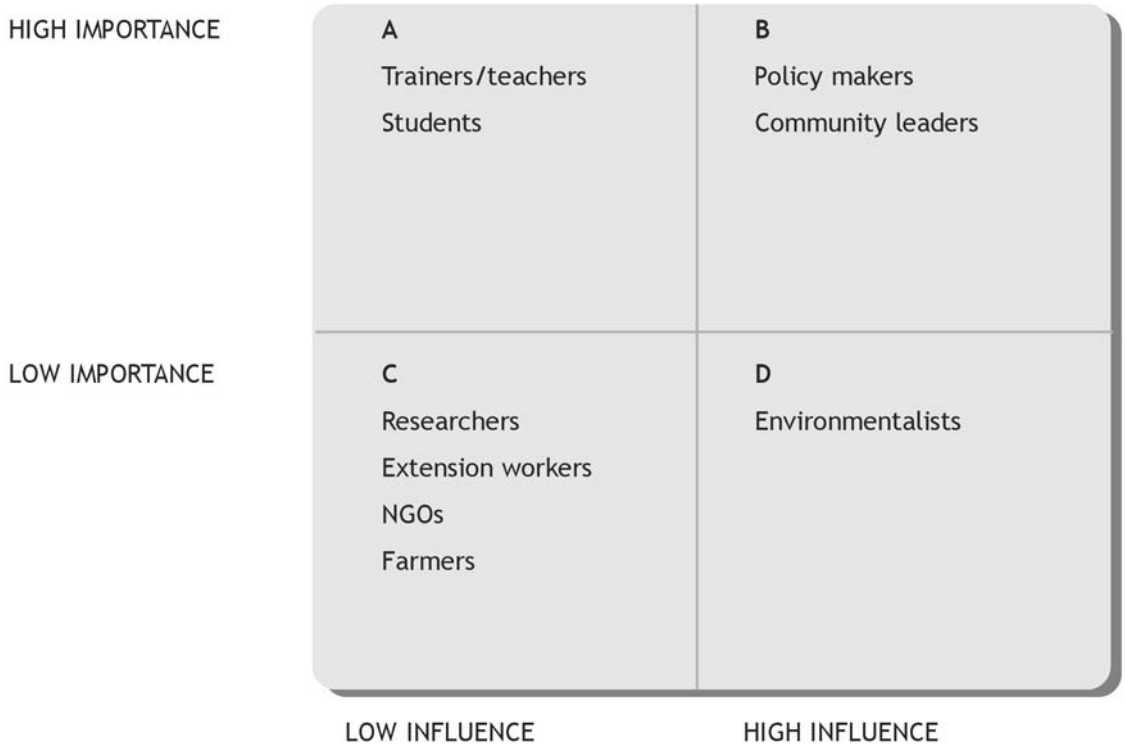
Influence is the power which stakeholders have over the training course design process. It is the extent to which people, groups or organizations are able to persuade or force others into making decisions and taking action. Groups or individuals who control resources are often very influential, for example.

Different stakeholders bring with them different degrees of importance (how much they benefit from or contribute to the training programme) and influence (how much they are able to affect the training programme, i.e. their relative power).

There are different ways of analysing this relative importance and influence. One involves a matrix, and is very useful when working with participants who are familiar with abstract visualization (graphs, diagrams, etc.). The other method, making a Venn diagram, is commonly used with participants who are less used to abstract visuals, and find it easier to use images which are more representative of reality. We describe both methods here (Taylor 2003).

a) develop an 'importance and influence' matrix:

Draw the matrix below on a large flipchart. Write the name of each stakeholder included in the list made already on a separate card or 'Post-it' and stick the cards on the matrix according to the participants' view of each stakeholder's relative importance and influence (don't use glue, or it will be difficult to move them around). Don't worry about locating them exactly, since this is by nature a rather subjective exercise. Once all the cards are in place, stand back and have a look. If necessary, move some of the cards around until a consensus is reached. Then read the comments below about the relevance of each box.



Analysis of the importance-influence matrix and its application:

BOX A: This group will require special initiatives to protect their interests.

BOX B: A good working relationship must be created with this group.

BOX C: This group may be a source of risk, and will need careful monitoring and management.

BOX D: This group may have some limited involvement in evaluation but are, relatively, of low priority.

b) using a type of 'Venn' diagram

Prepare the following:

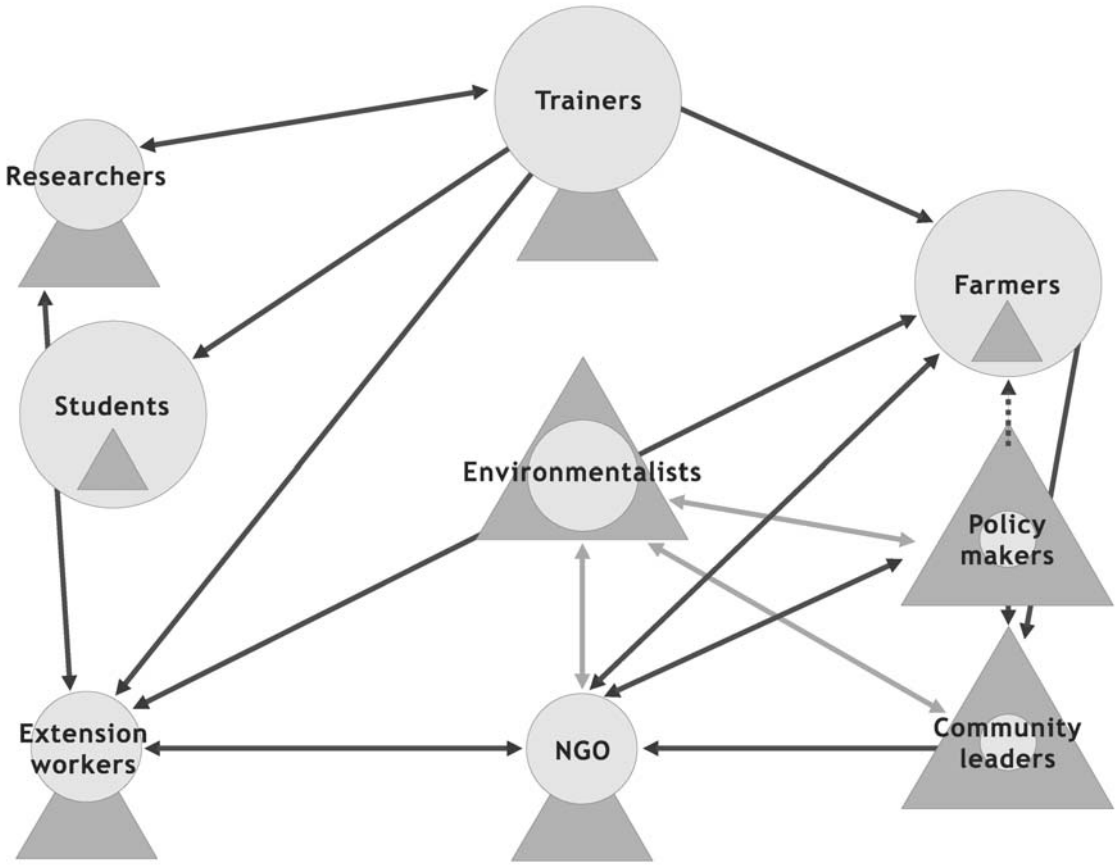
- circles made of card, in three sizes, e.g. 8 cm, 12 cm, 16 cm and in two colours,
- triangles made of card, in three sizes (similar range to the circles),
- large flipchart paper.

Take the list of stakeholders identified earlier. Use one colour for 'outsiders' and another for 'insiders'. In the centre of the flipchart, draw a circle and write in it a title such as 'PCD', or 'training'.

Begin with the list of outsiders. For each stakeholder, decide how important their involvement will be and choose a circle; either of little importance (smallest circle), some importance (middle sized circle) or very important (largest circle). Write the name of the stakeholder in the appropriate sized circle. Repeat for all outsiders, and then, changing colour of the circles, follow the same procedure for all the insiders.

When every stakeholder has been written on an appropriate circle, organize and stick all the circles onto the flipchart. You can group the circles according to relationships between them, the closer the relationship, the closer the circles will be together. You could even add lines between certain stakeholders to show formal linkages between them. You could also add another dimension if you wished, for example, including frequency of involvement; the more frequent the involvement, the closer the circle to the centre of the diagram. However, this will make the diagram more complex, so it is just an option.

Finally, for each stakeholder, choose a triangle (small, medium or large) depending on the degree of influence each has on the PCD process. Stick the appropriate sized triangle on the edge of the circle. A stakeholder awarded a small circle, could receive a large triangle and vice versa. Once the diagram has been completed, take a look at it in the group, and discuss the relative importance and influence of each stakeholder until a consensus is reached.



Example: Training on agroforestry for soil conservation: importance and influence of stakeholders

For both methods (a) and (b), it is good to have two groups of participants who complete the exercise, and then compare the results. The key output of this part of the analysis is not so much the finished matrix or diagram (they are certainly useful), but the issues that arise from the discussions. These will help the finalize the stakeholder analysis.

Using the output of the stakeholder analysis

The reason that stakeholders may be assigned different roles is based on the idea that there are different levels of participation. Some stakeholders may not have time or even want to be heavily involved in the training course design process; but they may like to be kept informed. This is a relatively low level of participation. Others, however, will want to be consulted, to be asked to give advice, comments or suggestions on different aspects of the course design. Training needs assessment and

evaluation often involve consultation, but it is useful also to consult certain stakeholders on aims, objectives, course outlines and plans for implementation. Some stakeholders need to participate fully in course development; the trainers and trainees are two obvious groups which will be involved extensively, especially during the implementation phase, but other stakeholders such as subject matter specialists, advisors, even resource persons from the community, may become real partners. Finally, for each stage of course planning, implementation and design, an individual, a group, or an institution will be in ultimate control. They will have the responsibility for final decisions, and it is important to understand exactly who these stakeholders are in order to avoid major problems, especially at the stage of implementation.

Once the different stakeholders have been identified, and their potential roles and responsibilities proposed, it is possible to begin the process of training course design with appropriate stakeholder involvement. The level of resources will of course determine the extent of stakeholder involvement. Some stakeholders may need transport, accommodation, even fees, to allow them to participate. Anyone organizing a PCD process does of course need to be realistic and pragmatic, and at some point, you will need to achieve a balance between what is desirable, and what can be afforded. However, if key stakeholders recognize direct benefit by their involvement in PCD, they may be able to provide resources themselves. Arriving at this point may take time, but it is always worth making the effort to discuss with potential stakeholders what is required of them, and also what they may expect to gain as a result. This is all part of a participatory approach. The stakeholder analysis described above can at least help to ensure that you are well prepared as you embark on a PCD process.

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Part II: topic 3
Training Needs Analysis (TNA)

Fast Track

Key Resource Materials

Training Needs Analysis (TNA)

Learning outcomes

After going through this topic, you will be able to:

- Explain the need for a thorough and participatory Training Needs Analysis (TNA).
- Describe the main elements of the TNA process.
- Design and carry out a TNA for a specific training course.
- Use the results of a TNA in the course design process.

Training strategies

Training Needs Analysis, like stakeholder analysis, is interesting but demanding. It requires critical, analytical skills, and should be carried out in a systematic way. Some key skills are required in order to carry out a TNA effectively. These include skills in:

- basic communication
- interviewing
- data collection and recording
- data analysis
- reporting.

If you are training others to carry out a TNA, careful planning is needed, and enough time should be allocated to ensure that participants have a chance to try out the main parts of the process. Some participants you work with may have extensive experience in carrying out research and analysis, and may already have acquired some of the core skills (interviewing, data recording, etc.) listed above. This will make preparation for doing a TNA faster and easier. If you are working with people for whom doing research is rather new, then allocate extra time for sessions, which help participants to develop these skills. Learning to communicate effectively and to carry out good interviews may take some time, but the best way to learn is by doing, with effective coaching and support.

It is important to remember that training is not the answer to all problems. Sometimes problems arise within organizations (structures, systems, etc.) which need to be resolved through organizational change. For this reason, it is always a good idea to widen a discussion of training needs and give consideration to other organizational development issues. Probably by doing this, you will also identify training needs which can lead to improvements at an organizational level.

Key content

General points

- Training Needs Analysis is part of a wider process of situation analysis.
- Situation analysis requires analysis of key actors (stakeholders) with an interest in the training course.
- It also involves analysis of all the factors, which may or will affect the learning process and outcome of a training course.
- Not all needs can be addressed through training. Some problems can only be resolved by other kinds of change within an organization, such as new systems or structures, policy changes or other reforms or strategies.
- Methods required for situation analysis include collection of primary or secondary data, and a range of participatory research methods.
- Training Needs Analysis leads to identification of the needs for knowledge, skills and attitudes (KSA) at 3 different levels:
  - organizational training needs
  - job-related training needs
  - individual training needs.

The TNA process

Identify the basic problem to be addressed through training by initial discussions with stakeholders: ensure relevant stakeholders are involved in each of the following steps:

- Select and choose research methods and tools.
- Collect data.
- Analyse data (identification of KSA).
- Present data.
- Report data.
- Share results with other stakeholders.

T i p s f o r t r a i n e r s :

- The only way to really learn how to do a TNA is to go into the field and carry it out.
- Remember, you may identify both training and non-training needs. They are all important.
- Monitor and record the process you go through as well as the results themselves.
- Work in a team if possible; it takes the pressure off you, and the contributions from different people can really help the TNA to be effective.
- Give yourself time to reflect on the process, to help you identify improvements for the next TNA – then carry them out!

Recommended reading

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Training Needs Analysis

Before starting to design an agroforestry training course, it is vitally important to understand the context in which the training will be carried out. This means gathering and analysing information about internal factors (e.g. organization of the institution, systems and structures, existing courses, human and physical resources, etc.) and external factors (e.g. relevant training policies, government policies, social and economic issues, environmental factors, agroforestry systems, existing or needed technologies, etc.). A lot of information might already be available from literature, previous research, community-based activities (for example from Participatory Rural Appraisal (PRA) or Participatory Learning and Action (PLA) exercises which have led to the establishment of community development plans), and also from key informants such as policy makers, field staff, experienced trainers and of course community members themselves. In addition to this, however, it is almost always advisable to carry out a Training Needs Analysis.

What is a Training Needs Analysis?

The design of every training course should be based upon an understanding of the knowledge, skills, attitudes and beliefs, which people need to enable them to do certain things, carry out specific tasks, and behave in certain ways. The design of the training will depend upon the identification of these needs, and the response that will be most effective in meeting these needs. Identification and analysis of training needs is called a Training Needs Analysis, or 'TNA'. But why is this necessary?

A lot of training has been designed without taking the needs of the participants into consideration. Instead, other needs (perhaps national manpower needs, for example, or the needs of the training institution, or even of the trainer) were seen as more important or valid. Sometimes an effort is made to consider training needs, but the information collected is not sufficient, or not from the most appropriate sources. If the learners have not been involved, they may feel distant from the learning process, and demotivated. They may not understand the concept of the training and be uncertain about what they will achieve at the end. In short, the training is unlikely to be effective.

The stakeholder analysis carried out in the early stages of PCD is an important starting point, as it can help to identify the best sources of information about training

needs. For example, people who already possess the right skills to perform certain tasks effectively can provide very useful information, as well as the supervisors or employers of the trainees. They are aware of new developments, difficulties and constraints. The potential learners are also key informants, since they know best what they are already able to achieve, and what they would like to do in the future. The team designing a course can collaborate with these stakeholders to build and structure a training event effectively.

Sometimes, Training Needs Analysis can be very exact. For many agroforestry techniques (tree planting, for example), there is a clear procedure. Through observation and interviews with skilled practitioners, it is relatively easy to outline the key tasks and skills, as well as the knowledge and attitudes required. The course designers can then identify the 'training gap' (i.e. the difference between the KSA already possessed by the learner, and the KSA required to perform the task) and this will be the basis or series of building blocks for the training. The information provided by key informants and stakeholders is vital.

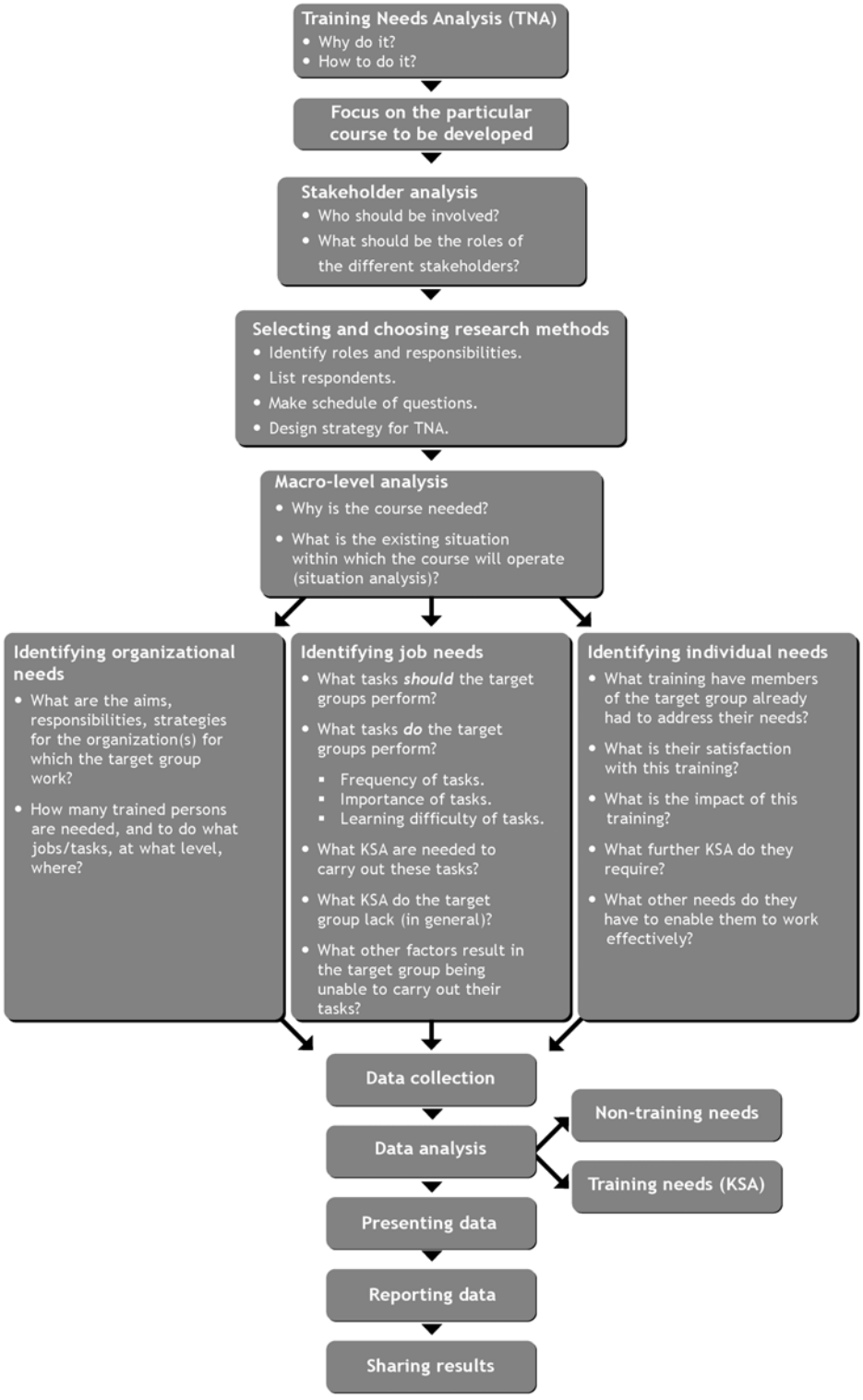
Some situations are very complex. In a particular farming context, it may become apparent to farmers and extension specialists that land use management is becoming problematic, with degradation of the land and poor yields of crops. Appropriate technologies, integrated with existing practices, may enable farmers to increase their yields and the availability of food. One range of solutions or options could be the introduction of agroforestry practices. However, the farmers may not be familiar with these, and uncertain about what they should be growing to guarantee enough earnings and produce to feed their families. The extension specialists also may not be familiar with these practices, or may not know how to relate them to what the farmers are already doing. How will trainers design training courses for the different groups, meeting their different needs, in these circumstances?

In such a case, and there are many real-life examples of this, a more open-ended, flexible and dynamic process will be needed. A wider range of stakeholders may be involved, and their contributions may vary widely. A more participatory and open-ended approach will be very useful since it will establish a dialogue between trainers, learners, and other relevant stakeholders.

How is a TNA carried out?

A first step in assessing training needs is to analyse the needs of the organizations for whom the trainees work. Secondly, it is useful to carry out a job analysis: careful determination of job components, identify what is missing to perform the job to the required standards, identify what gaps can be filled through training, and what type of training, and ultimately prioritize training needs. Finally, wherever possible, it is valuable to assess individual training needs. This last analysis is difficult sometimes, because trainees may not be accessible prior to the course. It becomes a very powerful method, however, when trainees are undergoing regular training over a period of time. This all sounds quite simple, but in fact, TNA is quite difficult to do well. For this reason, an example of a methodology is provided here. It can be adapted to suit the particular circumstances of any training.

TNA planning process



Methods of needs identification - the process

The following paragraphs describe ten important steps in training needs identification and analysis.

1. Stakeholder analysis

The topic on this subject (Part II - topic 2) clearly indicates how important it is to identify all possible stakeholders with an interest in the training process, including the identification and assessment of the training needs. Stakeholder analysis in the context of needs assessment will reveal the importance and possible influence of the stakeholders in TNA, their type of participation, interest and possible impact on them.

2. Selecting and using the research methods to identify training needs

Identifying training needs is a form of research. First, evidence suggests that there is a basic problem which can be addressed through training. It may also be necessary to address the problem with non-training measures. So it is important to identify clearly the 'training gap'. This is found by comparing an existing situation with a future, desirable situation, and then finding out how training can bring us from 'here' to 'there'. Various methods may be used to do this, including the following:

- self-report questionnaires
- observation
- individual interviews
- checklist / job description
- diary records
- work sampling
- technical expert conference
- critical incident
- examination of existing records.

Interviews are one of the most important methods used in TNA: suggestions on how to improve interviewing are given on page 89 - Semi-Structured Interviewing.

The choice of research method will depend on the questions which are to be asked. The questions will emerge as you consider what needs are being addressed (organizational, job, individual). One useful tool is to match the questions with the research methodology, as follows:

Questions	Source of information	Methods of collection	Responsibility	Details
What are the main difficulties farmers face when harvesting mangos?	Farmers, buyers, extension staff ...	Interviews, observation of harvesting techniques	Training manager	Schedule TNA for next harvesting period
How well do the extension services support farmers who produce mangos?	Farmers, extension staff, extension managers. Records of extension activities in field	Interviews, observation of extension practices. Reading reports of extension activities	Training manager; Head of Extension service	Obtain permission to view records of extension activities
...	...	...	...	...

Example: TNA related to mangoes

Logistics and strategy for the TNA

Once the questions and methodology have been decided upon, the following issues are also important to think about:

- How many interviews, observations, questionnaires, samples, etc.?
- Where?
- With how many groups?
- By whom?
- How long (days)?
- Training of interviewer (Guidelines for consolidation, piloting with students and revisions where necessary)
- Field work
- Analysis (primary)
- Workshop – consolidation
- Presentation to stakeholders.

All of these points need careful planning.

3. Planning identification of organizational needs

There are two steps:

- List organizations with a stake in the training.
- List questions to ask them, e.g. what are the critical changes affecting the work and operations of the organization? What are the relevant policies within the organization? What are the current strengths and weaknesses of the organization? What opportunities and threats are being presented from the external environment? etc.

The list of organizations and appropriate questions can be presented in a table:

Organizations	Questions
Extension service	• What kind of services does the Extension organization provide to mango farmers? • What problems arise in providing these services? • What resources are available to support these services, and what are lacking?
Farmers' cooperative	• What is the role of the cooperative in supporting mango farmers? • What factors affect the capacity of the cooperative to support mango farmers?

Example: TNA related to mangoes

4.Planning identification of job needs

This should be carried out using a participatory methodology, ideally with the trainees themselves, prior to the training, or with other stakeholders who are able to provide good quality information about the professional activities of the target group.

The following steps are recommended:

- Identify main categories of jobs and make a list of all the tasks associated with a person in that category of job.
- Using interviews, questionnaires or through observation of people performing tasks, complete this frequency/ importance/ learning difficulty table.

Task	Frequency	Importance	Learning difficulty	Total	Priority
• Pest control for mango trees	3	3	3	9	***
• Weed control in orchards	3	2	1	6	**
• Harvesting mango	4	3	2	9	***
• Preparing storage for mangoes	4	2	2	8	**
...					

Example: TNA related to mangoes

The following scoring/coding can be used for the different criteria related to this task:

Frequency
1=Seldom (once or twice a year)
2=Occasional (every few months)
3=Weekly or monthly
4=Daily to weekly
5=Daily

Importance
1=Very little importance
2=Moderate importance
3=Very important

Learning difficulty
1=Easy
2=Moderately difficult
3=Difficult
4=Very difficult

Once the table(s) have been completed, it is useful to find out what are the priority tasks. The priorities may be stated as:
* =low
** =medium
*** =high

Again through consultation with representatives of the target group and other relevant stakeholders, it is now possible to choose one of the high priority tasks and identify the (ideal) KSA required for someone to perform it.

5. Planning identification of individual needs

Here, it is important to estimate the training needs of individuals, by preparing a variety of questions to them, such as the following:

- What tasks do you do regularly?
- What difficulties do you face when doing these tasks or your job?
- What could help you to do your job better?
- What kinds of knowledge do you need to do your job?
- What skills do you need to do your job?
- What kinds of attitudes do you need to do your job effectively?
- Which of these KSA do you lack now?
- How long have you worked in this job?
- What do you like most about your job?
- What do you like least?
- What would you like to change about your job?
- Do you think you are doing a good job?
- How do you know if you are doing a good job?

Each of these questions may be followed up with probing (why?, when?, etc.) if necessary.

6. Data collection

This is the point when plans become action. If the planning has been effective, then the data collection should go smoothly, but always expect the unexpected. Flexibility, commitment, energy, organization and a sense of humour will all be needed during this period.

7. Analysis of the data collected in the TNA

It is important that data is sorted out as the TNA survey progresses. This has two advantages. Firstly, it will not be necessary to fight with a huge amount of data at the end of the survey. Secondly, there will be a better understanding of important issues emerging during the survey, which may be explored in more detail or clarified in some way. Identify categories into which data can be inserted.

The knowledge skills and attitudes (KSA) identified will form the basis of the curricula to be developed. Once these KSA have been identified, it will be necessary to prioritize which training programmes can or should be offered, and when. It is therefore important to develop a training strategy once the results of the TNA are known. For any training course/programme developed, there should be clear evidence which justifies its provision. The information collected in the survey which is not directly related to KSA will provide this evidence, and can be useful when developing a training strategy. It can also be useful in identifying non-training needs. Training is not the answer to every problem!

8. Presenting the TNA data

There are different ways in which the data could be presented. One way is as follows:

Target group	Existing			Future/ required		
	K	S	A	K	S	A
1						
2						
3						
Etc.						

9. Reporting the data

It is essential to prepare a report of the initial consolidated results of the TNA. This could be organized under the following headings:

- Policy.
- Environment.
- Client organizational issues.
- Tasks and activities (existing and future).
- Training provider organizational issues.
- Individual needs.
- KSA (existing and future/required).
- Curricula which are going to be planned (including time frame, and a rough idea of content).

10. Sharing the results

All the stakeholders involved in the TNA should have the opportunity to give feedback on the results. This may be done through a workshop, to which key stakeholders are invited. The results may be presented, and then participants should have the chance to discuss the results in detail, either in small groups or in a plenary session. It is not always possible to invite all stakeholders to a workshop; in this case the results of the TNA should be disseminated in some other ways (for example, the written report). Where data is collected from groups or individuals who cannot participate in a workshop to discuss the findings and have no access to written reports, it is important to provide opportunity for their feedback during the data collection process. A meeting could be held, for example, where the researchers present the findings from the field directly to those who contributed their ideas. This improves the chance for feedback and validation of the results. It also emphasizes the importance for the researchers to sort their data as they proceed with the collection.

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Taylor P. 2003. *How to Design a Training Course – a guide to participatory curriculum development.* London: VSO/Continuum.

Semi-Structured Interviewing (SSI)

Interviews are a very useful way of gathering information about training needs, but interviewing requires a distinct set of skills and techniques. Here are some general points on how to carry out SSI effectively.

The art of interviewing

- An introduction and an explanation of purpose are vital.
- Start with general questions describing the current situation; it is easier for informants to answer and it gives a context and opportunity for focus.
- Be careful with very 'big' questions like: 'what do you need to learn?', as such questions are very difficult to answer, and it is very difficult to analyse the response.
- Develop a dialogue.
- Be observant.
- Use open questions (who? where? what? when? why? how?) - you should not use too many questions starting with 'why?' (*i.e. don't put too much pressure on the interviewee).*
- Use simple language.
- Ask one question at a time.
- Start with broad subjects and then concentrate on more specific topics.
- Avoid leading questions.
- Probe for deeper understanding.
- Do not 'supply' answers.
- Do not 'lecture'.
- Be prepared but flexible.
- Be clear about the reason you are interviewing a person or a group. Are you inquiring about their training needs, or do you want their opinions about the needs of others with whom they have a relationship?
- Remember you have to analyse the data. Try to organize your notes/ records in a simple way - use a checklist or tables to help record data and analyse it later.
- Keep an open mind- some information will be useful for later - other training needs will emerge which you can consider in the future.

- Remember the effectiveness of training will depend on the infrastructure and the context. So you need to match these and pass on information to others where appropriate.
- Use methods (especially participatory methods) which can address several questions at once. This helps to relate issues in an integrated way and can be more meaningful to respondents. It can also raise new questions that were not thought of earlier.
- Use secondary data when possible to avoid gathering information already available; but it is good to double-check accuracy/ validity of secondary data - often statistics are out of date or faulty.
- The answers to some questions do not lie in the domain of some informants. Identify appropriate informants for the appropriate questions.

The art of interviewing is rather like the art of good conversation. It is important, therefore to always:

- *Be polite.*
- *Be sensitive.*
- *Introduce yourself and explain why you are here*
- *Thank people after finishing.*

Interviewers who follow these basic rules should at least be welcome back in the future!

Content of the interview

There is some basic information which is usually offered and collected at the beginning of an interview.

Introducing

- Introduce yourself (name, position, office...)
- Purpose *(this needs to be written and inserted so that everyone can explain it clearly and in the same way)*
- Timing and planning

Personal information about the informant

Name of the informant

- Age
- Sex
- District
- Commune
- Village

Educational/professional background of the informant

- Qualifications
- Training courses attended
- Work/professional experience (years/level)

Guidelines for note-taking

- Only record what you see and hear
- Try to use tables or checklists to make your task easier
- The note-taker should concentrate only on this task (*for each interview, take turns for who should ask questions and who should take notes)*
- *Quote* the answers of the interviewee where possible and if interesting
- Read and fill in your notes at the end of the day

Reference

Theis J and Grady H. 1992. *Participatory Rapid Appraisal for Community Development.* London: IIED/Save the Children.

Part II: topic 4
Setting aims and objectives for a training course

Fast track

Key resource materials

Annexes

Setting aims and objectives for a training course

Learning outcomes

After going through this topic, you will be able to:

- Develop a curriculum framework based on needs identified.
- Write the aims of a teaching or training programme.
- Develop a set of learning outcomes or objectives for a training programme.

Training strategies

A training course framework provides the shape, direction and overall approach for a training course. It should be based upon the outcomes of the training needs analysis. This should have identified key areas of knowledge, skills and attitudes, which need to be addressed through the training. It is important to spend time on getting to understand the difference between aims and objectives, and even more time on practicing writing aims and objectives. Writing objectives is always difficult the first time. It is important to really understand the meaning of the objective (in whatever language you are using) and to ensure that it is SMART (S = Specific, M = Measurable, A = Attainable or Achievable, R = Relevant or Realistic, T = Time-bound; see the topic paper on page 100). If you are working in a participatory way, you will be involving others in the setting of objectives or learning outcomes, and getting feedback from others on the aims and objectives of your training course. This will help you improve them.

If you are training others to write objectives, you should be ready to give strong guidance to participants on how to improve the written objectives. Other participants are usually very good critics as well, and helping participants to comment on each other's objectives is a powerful learning approach.

Key content

Why do we need a curriculum framework?

- To give shape and direction to the learning process.
- To clarify learning outcomes.
- To describe learning processes.
- To guide teachers and learners.
- To inform other stakeholders.

What are the elements of a curriculum framework?

- Broad aims.
- The main learning outcomes.
- The critical content areas (topics, key points).
- Guide to methods of teaching and learning.
- Suggestions or examples for learning materials.
- Overview of evaluation process.

Aims of a teaching or training programme

- A general statement of purpose.
- Less specific than objectives.
- Usually longer term than objectives.
- Written in terms of what the trainer or teacher hopes to achieve through the programme.

Objectives and learning outcomes

- Objectives are very specific.
- They are written in terms of what the learner will achieve within a given period of time.
- They are based on a cognitive approach.
- They relate to a measurable change in behaviour.
- They should include criteria and conditions.
- Objectives should be SMART!

  S = Specific

  M = Measurable

  A = Attainable or Achievable

  R = Relevant or Realistic

  T = Time-bound

T i p s f o r t r a i n e r s :

- Practise writing learning outcomes and get feedback from others; this will help you improve.
- Always relate the learning outcomes back to the aims and the results of the TNA
- Remember the SMART rule.

Problems with objectives

- Cognitive theory has some limitations - objectives are often limited to the cognitive domain, and neglect skill-based learning, and changes in attitudes and beliefs.
- Assumption that objectives are the same for all learners.
- Learners not involved in setting their own objectives.

Learning outcomes

- Objectives are useful in principle, but sometimes lead to a rigid, inflexible approach.
- Learning outcomes provide a more open framework for learning, still taking behavioural change into account, and encourage a more interactive, participatory approach in their identification.

T i p s f o r t r a i n e r s :

- Always write learning outcomes in terms of what the LEARNER will achieve.
- Always relate the outcome to some measurable form of behaviour (direct or indirect) - use words which provide clear guidance, not vague and meaningless.
- Include conditions under which the behaviour will be performed.
- Include criteria which describe the standard or level of the performance.

Recommended reading

Davies IK. 1976. *Objectives in Curriculum Design.* Maidenhead: McGraw-Hill.

FAO. 1993. *Trainer's Guide: Concepts, principles and methods of training, with special reference to agricultural development.* Vol. 1. Rome: FAO.

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Aims, objectives or learning outcomes

Setting aims

An aim is a general statement, which attempts to give both shape and direction to a set of more detailed intentions for the future. They are not so specific as objectives. Also, they are usually written in terms of what the trainer or teacher will do, rather than what the learners will do (objectives), by the end of the course.

Aims are sometimes broken down into long-term, medium-term and short-term aims. Aims ultimately give rise to more specific statements – these are the objectives or learning outcomes.

Why are aims necessary?

Everyone has broad aims. A simple example is what someone intends to do on a particular day, e.g. 'I am to finish preparing my notes for tomorrow's teaching session'. An educational programme will also have an overall aim, in order to provide shape and direction. If a teaching programme is very big, then there will probably be a stated aim for each subject area in a course. There may even be an aim for each particular lesson or session or teaching session.

There is a lot of discussion about whether aims are needed at all. Some trainers feel that the objectives are all that is needed. Others believe, however, that aims are required precisely because they guide the preparation of the objectives. Still others say that, if your aims are good enough, there is no need to be more specific when planning. Systematic planners usually develop objectives from the stated aims to a high level of specificity. Those using the process approach often feel happy only with aims.

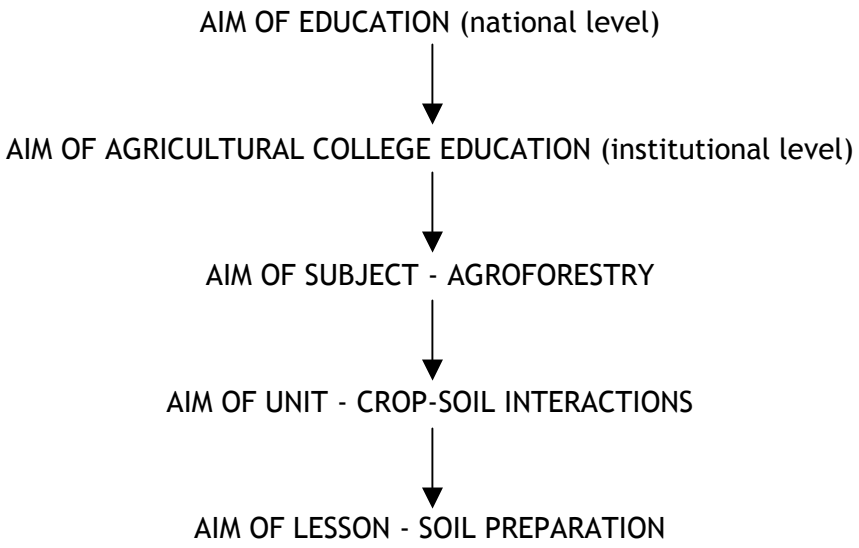
Setting aims – an example

How specific should aims be? Some trainers believe that aims should be very general, whilst others would set 'long-term', 'medium-term' and 'short-term' aims.

When developing a curriculum, aims can be written at different levels. For example, there may be one or several aims for a course. This course may be made up of

subjects for which aims may also be written. Individual lessons or training sessions are also likely to be based on particular aims.

For example:



Example : AIM of a course for farmers on trees for soil conservation

To provide the necessary knowledge and skills to farmers so that they can manage agroforestry trees and technologies for soil conservation purposes while at the same time improve their crop yields.

What is an objective or learning outcome?

Educational objectives are different to aims. Often they are termed 'learning outcomes', because not everyone feels comfortable with the term 'objective'. This suggests an externally driven approach, with too narrow a focus. It is useful, however, to identify objectives or learning outcomes in training courses, since many training programmes fail to achieve any learning at all. In a PCD approach, the issue is to try to involve stakeholders, especially the learners, in the identification of the objectives. This may be done before the course, or even as the course progresses, where there is opportunity for a flexible approach.

An objective is a statement of what learners will be like or what they should be able to do after successfully completing a given course of instruction or being exposed to a given learning experience. In other words there should be a measurable change in behaviour. The objectives will derive from the stated aims, and different stakeholders may be involved in their construction.

How to write objectives?

There are four basic rules for writing educational objectives.

Objectives should:

1. be written in terms of the learner, i.e. what the learner will be able to do after instruction;

2. identify the desired behaviour by name and specify observable behaviour (it must be possible to assess the activity in some way);

3. state the conditions or restrictions under which the desired behaviour will occur;

4. include a criterion or performance standard which the learner must achieve to be considered acceptable.

These rules are sometimes expressed by saying that objectives should be 'SMART'.

S	=	specific
M	=	measurable
A	=	attainable
R	=	realistic
T	=	time-bound

Example: OBJECTIVES of a course for farmers on trees for soil conservation

At the end of the course, farmers will be able to:

1. Identify and collect germplasm of trees that can be used for soil conservation and soil fertility enhancement.
2. Raise seedlings of such trees.
3. Establish and manage appropriate agroforestry technologies for soil conservation and soil fertility enhancement.

Behavioural change

In order for the objective to be achieved, some change in the learner's behaviour must take place. In order to assess that this has occurred it is necessary to have evidence. This is done by including a verb in the objective, i.e. a statement of what the learner will be able to do after the period of learning. Some words are better than others for the construction of objectives. A list of useful verbs is provided at the end of this topic in annex 1 – Shopping list of verbs). Some rather general words, such as know, understand, enjoy, believe, appreciate, should be avoided.

It will be very difficult to measure whether someone 'knows' something, but much easier if you expect the learner to 'explain' something.

In order to produce psychomotor objectives, the use of task and skill analysis may reveal the component abilities, which together make up a particular skill; e.g. many skills are required in order to 'prune a tree';

Classification of objectives

According to some educationists, there are three 'domains' of learning:

1. cognitive domain: deals with objectives which emphasize intellectual outcomes such as knowledge and understanding;
2. affective domain: deals with objectives which emphasis feelings and emotions such as interest, attitudes and appreciation;
3. psychomotor domain: deals with objectives which emphasize motor skills such as writing, using tools, using hands, etc.

Every objective is likely to have cognitive, affective and psychomotor components

because all learning activities involve all three domains. Each objective is therefore classified according to the major component. E.g. 'planting a tree' lies primarily in the psychomotor domain but still requires knowledge and attitudes.

Levels of learning

Within each domain, there are five or six levels, ranging from the simple to the complex; each successive level assumes that all those below it have been achieved. E.g. in the cognitive domain, 'application' (level 3) presupposes that knowledge (level 1) can be recalled and comprehended (understood) (level 2).

For example, the cognitive domain has six levels:

1. knowledge,
2. comprehension,
3. application,
4. analysis,
5. synthesis,
6. evaluation.

It is much harder to ensure that learners are able to 'evaluate' than it is to ensure that they 'know' something. For this reason, there is a tendency to only write objectives for the lower levels of the domains. It is also more difficult to ensure that objectives based on the affective domain have been achieved. How do you find out if a learner 'identifies with' something? These are some of the problems you are likely to face when writing objectives!

Teachers and learners - who does what?

Many teachers and trainers plan their teaching in terms of what they will do themselves. The most important point to remember is that objectives are to be written in terms of what the learner will be able to do after a period of learning has taken place. This requires a shift in emphasis from what the teacher/trainer will do, to what the learner(s) will be able to do. Grasping this idea is the key to writing objectives.

The learner's responsibility is to learn. The teacher or trainer has a key role to play in facilitating this learning, by doing the following:

1. identify the domain(s) and level(s) of any objective;
2. ensure a balance between domains of objectives;

3. ensure that higher as well as lower level objectives are included in any sequence of instruction (where appropriate);
4. ensure that lower level objectives have been achieved before higher levels are attempted (where sequential learning is wanted);
5. select and use content, methods and materials which promote the achievement of the learning objectives
6. devise assessment and evaluation processes which are appropriate to various levels of objectives.

An example of a learning objective

Let us consider an example. A need has been identified for people in a village to learn how to establish a seedbed for growing agroforestry trees from seeds. How could we write this as an acceptable learning outcome as it stands?

1. Behaviour:

What do we expect the learner to do? To 'know how' to make a seedbed, to explain it in the classroom, draw a picture, or actually establish a seedbed in the village? Let us assume that we expect learners to establish the seedbed - this can be observed, and therefore the learners and we can verify it together.

2. Setting conditions:

It is necessary to state clearly under what conditions the objective is to be achieved. If we were to say that the learner 'should be able to establish a seedbed for agroforestry trees', how long would he or she need to complete the activity? One week? A year? Ten years?

We can make this measurable by stating, 'by the end of the course, the learner should be able to establish a seedbed for agroforestry trees'.

3. Meeting criteria:

We might ask some other questions about the task to be completed? Where will the seedbed be established? Who should be involved? What preparations are needed? What will show that it has been established properly? What follow-up should be organized?

Evidently, we must specify the criteria to be met; e.g. the seedbed should be constructed in a way that will protect the seedlings and provide them with the best

possible chance for germination and strong growth; perhaps we might specify the location (in shade, beside a river...), or specify some social or environmental criteria, e.g. establish it in a village with not more than 50 households, in an area which includes newly allocated forestry land etc..

Our final objective could therefore be:

> By the end of the course the learners will be able to establish a well-constructed and maintained seedbed for agroforestry trees within the boundary of a village which has newly allocated forestry land.

But this example also highlights the difficulties with objectives. Establishing a seedbed involves many, many sub-tasks (choosing the site, marking out the site, preparing the ground, obtaining the seeds etc.). So, it may be necessary to break down this big task into smaller ones, and write a series of more specific objectives.

Now you must practise writing objectives yourself!

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The curriculum framework

Once you have prepared the aims and learning objectives, you can prepare an overall framework for the curriculum or course design. The purpose of this framework is to guide the teaching and learning process. It is used by teachers and trainers to help them plan their work. It is used by learners to follow the overall learning programme. It can be referred to by other stakeholders who wish to understand more about the training programme.

Developing the course design

There are many ways of setting out the basic framework for a curriculum. One 'model' is presented in annex 2 of this topic – Example of a curriculum framework. Whichever model is used, either more or less detailed than the one presented here, the most important point is that the framework is clear, useful and comprehensive. This will ensure that the curriculum is more than a syllabus, which is often simply a list of contents.

Once the framework has been designed, it is usually necessary to organize a programme of teaching and learning which allows the curriculum to be delivered systematically and effectively. The most common way to organize this is to draw up a scheme of work. This is the sequencing of the topics and activities over a given period of time, for example, one week, one month, six months, a year, a term or a semester. The scheme of work will complement the written curriculum and is a planning tool for teachers. It should always be developed in the local context, because the timing of key learning events for agroforestry education will depend on local conditions such as seasonal activities, climate, patterns of cropping and livestock management, festivals, etc. It should also take into account the demands on time of key stakeholders (teachers, students, resource persons, farmers, etc.) and the various opportunities and facilities available for practical work. The timing of practical activities should complement the more theoretical components of the teaching programme, to ensure that participants have an opportunity to reflect on theoretical concepts and principles, and to practise, experiment and explore these in an active way, whenever possible in the 'real world'.

Pre-testing and flexibility

Even if the preceding steps in curriculum development seem to have been effective, the implementation phase is really the 'moment of truth'. Implementation will always reveal the strengths and the weaknesses of the curriculum and of the process by which the curriculum has been developed. New curricula, or newly revised curricula, which are likely to have wide institutional implementation, are sometimes pre-tested in different contexts before they are more widely adopted. Different stakeholders may then give feedback on the effectiveness and efficiency of the learning brought about as a result of the programme of learning. A PCD approach favours flexibility, however, and wide-ranging adoption of a specific curriculum means that, in practice, many stakeholders will not be involved directly. The opportunity should always exist for experiences and learning points emerging from the field and other sources of information to be incorporated into the curriculum development process.

Reference

Rudebjer P. Taylor P and Del Castillo RA eds. 2001. *A Guide to Learning Agroforestry- a framework for developing agroforestry curricula in Southeast Asia.* Training and Education Report no. 51. Bogor: ICRAF.

Part II: topic 5
Content, methods and materials for teaching and learning

Fast track

Key resource materials

Content, methods and materials for teaching and learning

Learning outcomes

After going through this topic, you will be able to:

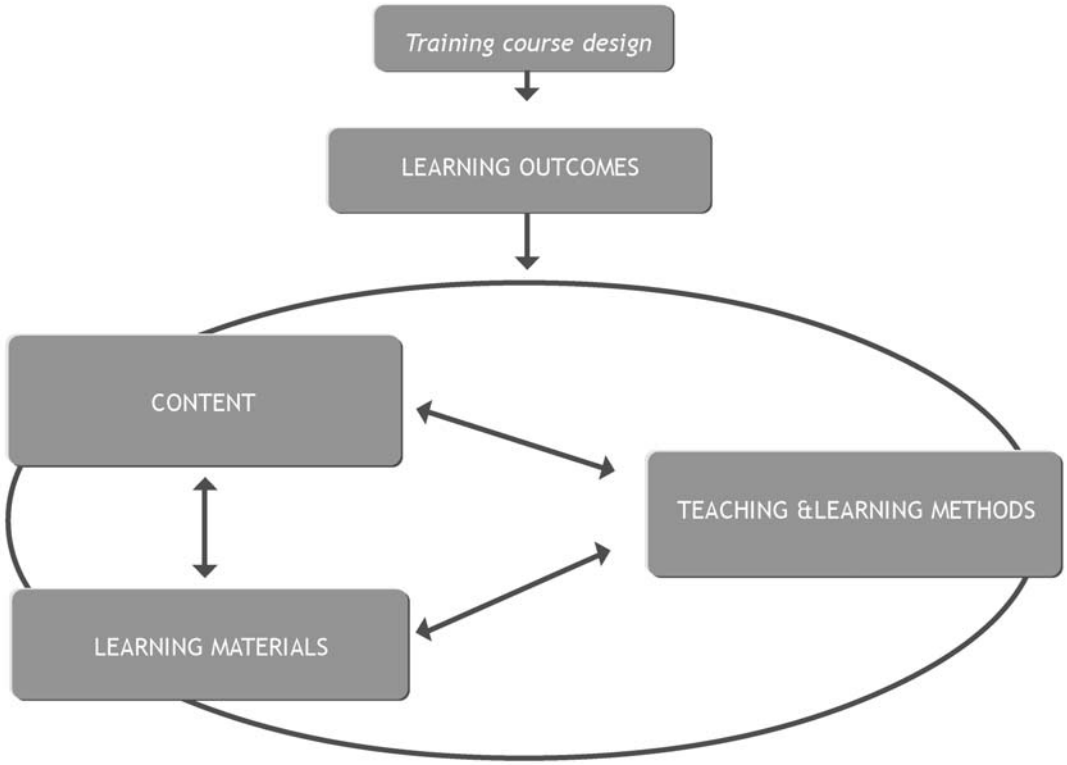
- Describe the relationship between the learning outcomes of a course, the content, training methods and learning materials.
- Identify and select the relevant content of the training course.
- Sequence the content of the training course in an appropriate order.
- Recognize the role and importance of appropriate teaching and learning methods and materials in the overall training process.

Training strategies

Once you have developed the course framework, you will need to consider the related content, methods and materials, which are needed to facilitate learning, and to achieve the identified objectives or learning outcomes. The choice and use of content, methods and materials will depend on the course framework. It is important to stress again at this point that you should never start designing a training course by identifying the content of the course. Always go through the earlier steps we have already described before considering the content, and then think about it in relation to learning materials and methods.

Key content

The following figure illustrates the relationship between course design, learning outcomes, content, methods and materials:



How to select the content?

When selecting the content it is necessary to keep in mind the knowledge, skills and attitudes that are desired/referred to in the desired learning outcomes.

Tips for trainers:

- Identify the content the participants 'must' know – include as much of this as possible.
- Identify what participants 'should' know, if time is available – include what you can.
- Identify what is 'nice' for participants to know but not essential – this should be selected last.

How to sequence the content?

For an optimal result, it is important to give enough attention to a proper sequencing of the content material.

T i p s f o r t r a i n e r s :

- Move from the simple to the complex.
- Use an existing logical organization (time, topic, job, task, learning styles).
- Move from the known to the unknown.
- Cover the content in the order of job performance.

Methods and materials for teaching and learning

Learning agroforestry demands the acquisition of a wide range of knowledge, skills and attitudes in learners. If learners are to be empowered, they must be able to organize their own learning, and not just be 'empty jars' to be filled up.

When considering the teaching and learning methods and materials to be used, it is important to decide early on about what the trainer will do, and what the learners are expected to do. These are dealt with again in more detail in topics 6 and 7. The more involved the learners become in their learning, the more likely they are to learn. Learning should be seen as a participatory process where the role of the teacher or trainer is facilitation, not indoctrination.

Recommended reading

Chambers R. 2002. *Participatory Workshops: a sourcebook of 21 sets of ideas and activities*. London: Earthscan.

FAO. 1993. *Planning for Effective Training.* Rome: FAO.

IIRR Philippines/VSO. 1999. *Creative Training.* Manila: IIRR/VSO.

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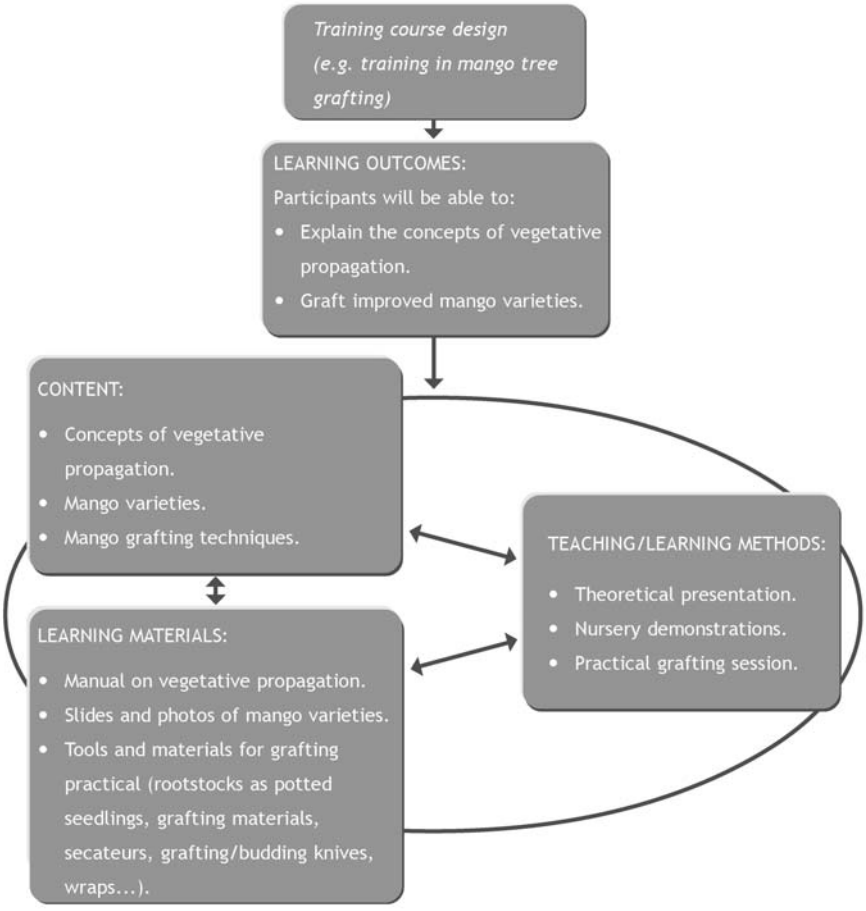
Rudebjer P, Taylor P and Del Castillo RA. 2001. *A Guide to Learning Agroforestry. A framework for developing agroforestry curricula in Southeast Asia.* Training and Education Report no. 51. Bogor: ICRAF.

Content, methods and materials

Every course will have an overall framework, which is based on the needed knowledge, skills and attitudes to be addressed. Within this framework, there will be a set of learning objectives, which indicate what every learner should achieve by the end of the training course. However, these objectives are not enough by themselves to bring about learning – they only provide a guideline about what should be learned, not about how this learning will take place. There is a direct relationship between the objectives of a course on the one hand and on the other hand the content, the methods and the materials that are used to facilitate teaching and learning.

This is shown in the following example of a training course in mango tree grafting:



The content of training courses

There are two factors to consider about the content of the training course:

- Selection of content.
- Sequencing of content.

Selection

Knowledge: What knowledge is required for fulfilling the needs of the learners? It is useful to divide the list into three categories:

- *Must know*
- *Should know*
- *Could know* (or 'nice to know')

All the knowledge that the learners *must know* has to be included in the content. **Some** of the knowledge that they *should know* and **a limited amount** of what they *could know* can be included. It is impossible to include everything!

Skills: What skills are required? A skills analysis may reveal these.

Attitudes: What attitudes or changes in attitudes are required? This needs careful research, through surveys, interviews and observation.

Once all the knowledge, skills and attitudes have been selected, it is necessary to organize them into a sequence.

Sequencing

There are four basic rules to follow when sequencing the content:

1. Move from the simple to the complex.
2. Use an existing logical organization. This may be chronological, topical or dependent on learning styles.
3. Move from the known to the unknown.
4. Cover the content in the order of job performance.

Having completed the selection and organization of the content of the course, the materials and methods should be selected.

Selection of methods and materials

The very nature of agroforestry demands the acquisition of a wide range of knowledge, skills and attitudes in learners. If learners are to be empowered, they must be able to organize their own learning, and not just be 'empty jars' to be filled up, as discussed in topic 1 - Adult learning.

When considering the teaching and learning methods and materials to be used, it is important to decide early on what the trainer will do, and what the learners are expected to do. It is very common to find trainers standing in front of a blackboard or overhead projector, or standing in a field and talking to the learners.

As we have discussed already, the more involved the learners become in their learning, the more likely they are to learn. This is especially true for adult learners, who already have a wide range of experience. As we mentioned earlier in the Toolkit, this suggests that learning should be seen as a participatory process where the role of the teacher or trainer is facilitation, not indoctrination.

Factors to consider when selecting methods for teaching and learning

There are four main factors to consider:

1. Objectives set: list all the possible methods which could be used to allow achievement of the objectives.
2. Content: narrow down the list to ensure the content is adequately covered.
3. Learners: consider their needs, capabilities, etc. This will reduce the list further.
4. Resources: this will determine the final selection of methods to be used, since there is no point choosing methods which cannot be implemented.

Examples of methods include:

- lectures/presentations
- group discussions/group work
- brainstorming
- demonstration
- reading
- exercises/problems
- case study analysis

- role play/simulations
- games
- practicals
- project work/research
- field visits
- attachments

Some of these methods are described in more detail in topic 6 - Teaching and learning methods.

Learning materials

Just as a good teacher or trainer will have a wide range of methods at his or her disposal, and know when and where they can be successfully used, learning materials will also be required. These will complement the content and the teaching and learning methods, leading to effective achievement of the learning objectives.

As a basic rule, educational learning materials should be attractive, interesting, challenging, durable, economically viable to produce and well organized in terms of content to enhance the learning process.

There are a number of steps to consider when developing teaching/training materials:

- establish the purpose of the materials
- identify the target audience
- decide the general types of material needed
- establish the instructional objectives
- identify and evaluate existing materials
- decide on the content and methods
- organize the presentation of the material
- choose an attractive format and style
- pre-test prototype materials and evaluate them
- devise assessment methods for final use
- use the materials.

More detail is provided on learning materials in topic 7 - Training materials - of this Toolkit.

Part II: topic 6
Teaching and learning methods

Fast track

Key resource materials

Teaching and learning methods

Learning outcomes

After going through this topic, you will be able to:

- List and describe a wide range of different training methods.
- Choose the most appropriate methods for the facilitation of learning.
- Apply appropriate training methods effectively.

Training strategies

It is difficult to 'learn' to use training methods effectively simply by reading a Toolkit. Ultimately, you have to try them out, and be prepared to make mistakes. Do not be surprised if things work out in different ways than you expect. Keep a record of the methods you use, and reflect on your own experience of using them, to help you adapt and improve them. Even better, ask colleagues or friends to observe you using different methods and get feedback. The participants in your training courses can also give you feedback on the methods you introduce; after all, they are the ones who should be benefiting from the training directly.

As we saw in the previous topic, you should select the most appropriate methods in relation to the content and learning materials, which are needed to bring about the achievement of the learning outcomes. You may develop skills in using a wide range of methods, but do not be tempted to use all those interesting methods in one session. The participants may enjoy them at first, but too much variety may cause confusion and frustration. Teaching methods are used to enable learning to take place, not to prove that the teacher or trainer is a good performer.

If you are training future trainers to use methods, then you will follow a different approach. In this case, you may focus completely on demonstration and practice of different methods in the training course, and ensure that the participants have enough time and opportunity to test them out for themselves, ideally in front of other participants. This is known as microteaching; you can even video a teacher giving a portion of a lesson and then let the teacher watch it afterwards,

complemented by a debriefing. You might have someone video yourself when teaching as well – watching yourself teach or train is always a good learning experience!

Key content

Questions you should consider:

- Will the teaching and learning methods contribute to the achievement of the learning outcomes?
- Do they complement the content?
- Do they meet the needs of the learners (what they need to learn and how they are able to learn)?
- Are the necessary resources available (human, financial, physical)?

Key skills required for facilitation of learning

A challenge for the agroforestry teacher and curriculum developer is to equip the participants with effective and suitable teaching and learning strategies and approaches.

Tips for trainers:

- Ensure that participants in the training are engaged and involved actively in the learning process.
- Understand the content of the course; monitor strictly whether participants understand the content of the course and, if not, act swiftly.
- Co-ordinate and help learners participate in learning activities which will help them to construct their own learning from the training course.
- Clarify meaning and help learners contextualize it to their own life circumstances.
- Help learners see how new knowledge can be applied in useful ways.
- Help and encourage learners to voice their opinions, raise questions and discuss issues with the trainer and with each other.
- Provide and distribute relevant information and learning materials which are needed to enhance learning.
- Monitor with the participants the group dynamics, communication processes

and the achievement of learning outcomes.

- Be aware of conflicts or blockages to learning, and find ways of resolving these with the participants.

Types of learning methods:

- lectures/presentations
- group discussions/group work
- brainstorming
- demonstration
- reading
- exercises/problems
- case study analysis
- role play/simulations
- games
- practicals
- project work/research
- field visits
- attachments.

Recommended reading

Chambers R. 2002. *Participatory Workshops: a sourcebook of 21 sets of ideas and activities.* London: Earthscan.

IIRR Philippines/VSO. 1999. *Creative Training.* Manila: IIRR/VSO.

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Teaching and learning methods

Introduction

A challenge for the agroforestry teacher and curriculum developer is to equip the participants with effective and suitable teaching and learning strategies and approaches. This is particularly important for complex, community-based natural resources management, where 'systems-thinking' is the key. Many participants in agroforestry courses themselves will later take on a role as trainer for farmers and extension staff, or for new generations of students. The choice of learning and teaching strategies therefore serves the double aim of providing knowledge and skills, and to equip participants with attitudes and approaches that will serve them in their working life.

The four main factors to consider when selecting methods for teaching and learning are:

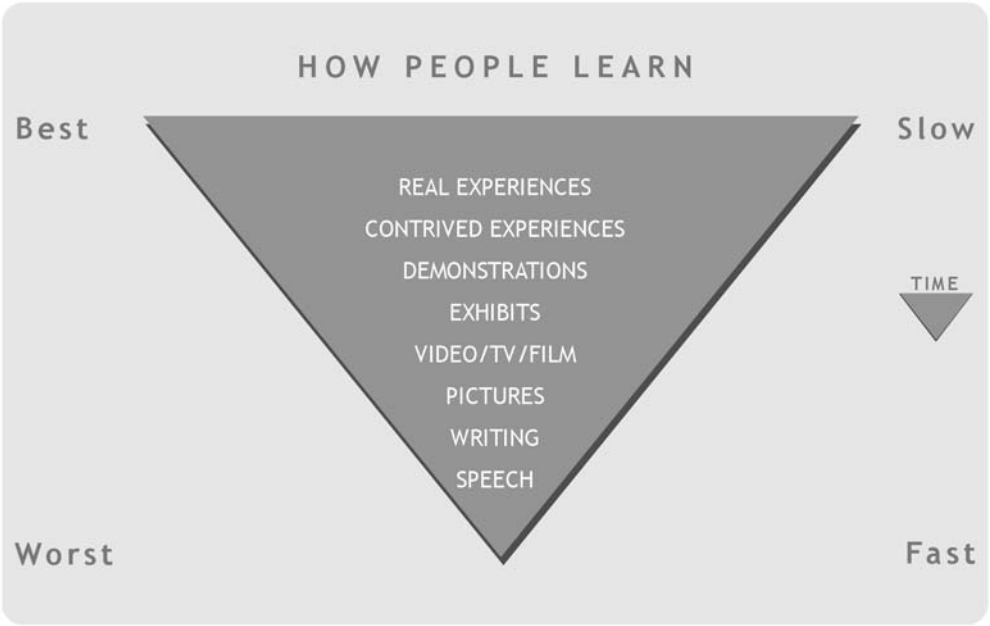
- Learning outcomes: List all the possible methods that could be used to allow achievement of the objectives or learning outcomes.

- Content: Narrow down the list to ensure the content is adequately covered.

- Learners: Consider their needs, capabilities, etc.

- Resources: This will determine the final selection of methods to be used, since there is no point in choosing methods that cannot be implemented.

Methods and experiences



People learn best by what they do and see, less by what they hear, smell or feel. The best methods of learning will try to involve several senses but with a focus on seeing and doing. Quite often, these methods will also require more time to implement and thus many trainers and teachers will prefer to cover a topic in a theoretical or classroom presentation with supporting written materials.

Examples of methods include:

- lectures/presentations
- group discussions/group work
- brainstorming
- demonstration
- reading
- exercises/problems
- case study analysis
- role play/simulations
- games

- practicals
- project work/research
- field visits
- attachments.

In addition, the following teaching-learning methods and experiences can be used to expose the participants to a wide range of disciplines:

- Thematic multidisciplinary seminars, to expose learners to cross-disciplinary issues and interactions.
- Talks by guest speakers, to provide disciplinary perspectives and summaries of disciplinary contributions.
- Problem-oriented workshops, to deal with and resolve real-world problems through focused case studies.
- Teacher-accompanied participation at government agency meetings, to expose learners to public participation in the policy process and the operational reality of the government.
- Have participants act as observers at village-level planning sessions, to expose learners to local-level planning and to the functioning of democracy (decision making) at the grassroots' level.
- Village- or farm-based practicum to gain understanding of the complexity of farmers' reality, decision-making and strategies.
- Weekend village residency, to engender empathy and cultural sensitivity.
- Video-recorded role-playing for reviewing and discussing the dynamics of group interactions, attitudes and skills related to real-life situations.
- Student seminars incorporated into courses.

Selected methods of teaching and learning

Lectures and presentations

Pure lecturing is a one-way communication process. It is the teacher's spoken message. The message is moved from the sender to the receiver in a one-way direction. Despite this limitation, the lecture when well prepared and presented, can stay in the memory for a long time. The lecture is a very effective and economical method of transferring information to a big group or when there is a need to present a large number of items of information in a short period. However, it is unsuitable to use it for teaching skills or very detailed issues.

The lecture when delivered by a skilful speaker can raise interest in the subject and leads to a more comprehensive research into the contents. It may cause the listeners to consider themselves as members of a group and to reflect on their role in it.

The subject matter must be divided into logical parts of the correct size. Since the capability for receiving information is limited, the lecture must be clear and it must emphasize the main points. In addition, the lecture must be in logical sequence to help the listener follow and understand the content properly.

The teacher may enrich his/her presentation by the use of illustrations on the board or transparencies or slides with the aid of the overhead projector. A lecture can also be combined with any other teaching method like demonstration, questioning or practical training to make it more effective.

Structuring a lecture

Possibilities for structuring a lecture:

1. The classical method—divide into broad sections, sub-sections and perhaps again in smaller units.
2. The problem-centred method—useful for examining alternative views and solutions to problems. It contains a statement of a problem's explicit and implicit criteria statement.
3. The sequential method—consists of a series of linked statements, which usually

lead to a conclusion. The teacher has to ensure that the steps are within the grasp of the participants and should frequently summarize the main steps and the procedure.

4. The comparative method—compares two or more processes, themes, stories, ideas or systems. It may be a search for similarities or differences, for advantages or disadvantages.

5. The thesis method—begins with a hypothesis and proceeds to justify it by bringing together a wide range of evidence and arguments that may be presented in major sections or in a problem form. It may include theses or counter-theses.

Tips for trainers

- Long lectures and presentations can be very boring. If you talk to your participants for a long time without involving them actively, you are likely to lose their attention. You need to motivate and interest them.
- Start the presentation by finding out what your participants know about the topic already; ask questions which do not require only a 'yes' or 'no' answer.
- Ask your participants why they think they should learn about this topic - this could help them have some input into the aim and objectives of the lesson.
- Try to relate the topic to what your participants are familiar with, either from a previous session or from their own experience; you may use examples, which they will find interesting.
- Do not try to cram too much information into a short time period; some of your participants will not take it all in.
- Remember that every course involves a group of individuals, each of whom has his or her own way of learning and personal interests; try to be aware and meet the learning needs and styles of each of your participants.
- Use a range of different visual aids whenever possible. The blackboard (or whiteboard) is very useful, but try to use posters, pictures and real materials (seeds, plants, implements, tools, etc.) if available; these create interest.
- Encourage your participants to actually become involved with the lesson material; use demonstrations; let your participants touch, smell, observe and draw the items under discussion; remember that 'doing' leads to 'understanding' - participants will forget most of what they hear, and a lot of what they see.
- Give your participants a chance to take notes, either during the presentation,

or immediately afterwards; you could do this by dictating, or by writing notes, neatly, on the blackboard. Participants should be encouraged to write their own, original notes which are the main points of the discussion, but this requires maturity and good literacy and language skills; once again, find out about the ability of your participants as soon as possible.

- Ask your participants to take some responsibility for their own learning; encourage them to undertake projects, keep diaries, look for information from newspapers and books, listen to interesting information on the radio, or the television where available, and observe the farming practices of their families and neighbours.
- Try to observe the reactions of your participants - this becomes easier as you get to know them, and ask questions regularly, sometimes to all participants, and sometimes to particular individuals. It is very helpful to know and address your participants by name, as this will help you to build up a good relationship with them, and it will increase their attention. You could ask each person to make a badge with their name on it, and for them to wear the badges until everyone is familiar with each other.

Case studies

The case study method is an extremely useful element of a training course. Case studies provide an opportunity to bring a story, example or situation from reality into the training room. They can expose participants to the 'real world' even when resources, time or opportunity are not available to take participants on field trips or study tours. They should not be used entirely to replace 'reality' visits, but certainly can be complementary to other methods in the teaching and learning process. Although they are one way of presenting information, their real benefit is in encouraging participants to think and interact with the subject of the case.

Case studies may be real stories, or they may be invented stories which are given a sense of reality. In both types, a case study is a written document, video or aural presentation (e.g. tape recording), which provides relevant information about an actual situation or event. Since good case studies usually are based on a story, there will be a focus on a person or group in a particular location, and an incident or an event. The case is selected usually for its capacity to stimulate interest, to present a

problem situation, and to raise issues for further reflection by participants.

Going back to the adult learning cycles (page 57) we can see that case studies can be used as 'experiences' for reflection, and as practical examples in which learners can test out their theories and concepts. They encourage the learning of skills in synthesis of information, analysis, decision-making, problem solving and evaluation; furthermore, they present information related to specific content of agroforestry courses in an interesting and challenging way. Another advantage of case studies is that they can be used in a safe environment (the training course), and expose participants to a sense of reality whilst minimizing the risk. For this reason, case studies are also very useful for trainers who would like to expose the course participants to sensitive or controversial subjects, for example impact of HIV/AIDS on communities and natural resources management. They are also helpful in presenting stories which take place over many years, certainly an advantage when describing agroforestry systems and interventions.

Tips for Trainers

- Case studies require very careful preparation, to ensure that appropriate information is provided, but also that room is left for participants to question, reflect and apply previous learning to a new situation.
- Avoid overloading the case study with information, or making it too long or detailed. Otherwise participants may lose interest in the story.
- Case studies work best when they are based on reality, and have a 'human interest'. People usually respond best to stories which involve people.
- Like any good story, case studies should have a good 'plot', with a sensible structure, and clear language, pitched at the level of the participants. The case study should of course be understandable to the trainer, and the trainer should also think in advance about how he or she would answer the case study questions; this can be useful during the subsequent discussion.
- Case studies should be selected or prepared according to the needs of participants in a training course. Some case studies can be used on many occasions; sometimes a new case study should be prepared for a specific training course and the requirements.
- As for other training methods, the objectives/learning outcomes of the training

course will guide the preparation and use of the case study.

- Case studies may be provided to participants in different ways:
  - presented in plenary, with a follow-up assignment by individuals or groups;
  - provided, in a written form to groups or individuals for reading/watching, with a follow-up plenary, group or individual assignment and/or discussion.
- Enough time should always be allocated for reading/watching the case study, for reflection, and for the follow-up discussion. If the time is spent preparing a good case study, then enough time should be given also to using it in the training session.

The following is an example of a case study:

AGROFORESTRY FOR THE SAHEL – THE SENEGAL CASE STUDY

During its early years, the International Centre for Research in Agroforestry (ICRAF) planned and implemented its collaborative agroforestry research and development activities in many agroecological regions and countries using an approach referred to as '*Diagnosis and Design*' (D&D).

In the case of the Sahel, four countries were interested to consider agroforestry as an alternative and more sustainable land use approach: Senegal, Niger, Mali and Burkina Faso. After being trained in the D&D approach, multidisciplinary teams of scientists and development specialists implemented the 'macro D&D' phase, during which each country identified the boundaries of the semi-arid region in their country and characterized land use based on characteristics of biophysical nature (topography, hydrology, rainfall, soils, vegetation, agriculture…) as well as of socio-economic nature (roads, markets, population density, ethnicity, extension services, national policies, tenure, labour, etc.) This information was obtained from a variety of sources such as published documents, key informants, relevant Ministries, global databases, etc and through field verification. The outcome of this phase was a report containing a detailed description of the semi-arid region in each country and the identification of all land use systems in it, followed by an analysis of land use problems and constraints including the potential of agroforestry in addressing these.

At the end of this phase, the national teams met during a regional planning workshop aimed at comparing the findings of the macro D&D phase in each country and to agree on priority land use systems in the different semi-arid regions of the countries. They also discussed the implementation of the micro D&D phase leading to a detailed description and analysis of priority land use systems as well as the development of potential agroforestry interventions, including their research and development needs.

The micro D&D phase focused on a priority land use system in each country (e.g. the 'groundnut basin' in Senegal). It involved a more detailed analysis of farming using a participatory approach directly implicating farming communities in the analysis as well as in the design of appropriate agroforestry interventions that addressed farmer identified problems and constraints. This phase required the use of, and training in, various participatory tools such as semi-structured interviews, mapping, transects, calendars, ranking, etc. The outcome of this phase was a very detailed study of farming systems and a description of potential agroforestry interventions.

The national teams met again during a regional planning workshop during which they presented these studies and agreed on a regional and collaborative research and development agenda needed to develop agroforestry interventions. During this workshop, participants also agreed on detailed experimental protocols and training needs related to the knowledge, skills and attitudes required to implement national and regional agroforestry research and development agendas.
The use of the D&D approach and methodology, and the regional planning workshops, provided a sound basis for the development of a collaborative agroforestry research and development agenda for the semi-arid region of the Sahel that has now been implemented over several years. In later years, this approach has been improved through the use of better participatory characterization methods and tools, a more quantified approach of the analysis of socio-economic and biophysical problems and better ranking of problems and constraints.

This case study, and many others on the D&D methodology, has been used extensively for training and education purposes since they are based on real life experiences gained over a long time and at great expense. Resource persons who participated in the actual work, have translated this information into case study reports and lecture notes, text and picture slide series, a D&D training exercise book and a short D&D exercise to be implemented by participants attending introductory agroforestry courses. These case studies illustrate important agroforestry subjects and are a valuable, alternative teaching and learning method as compared to classroom theoretical presentations and lectures on the subject they illustrate.

Group work

For a more participatory approach to learning, participants can be organized in small groups to discuss something or to carry out activities such as exercises, practicals, role play performances, preparing materials and so on. In doing so, care must be taken to form groups properly and to deal with the outcomes of such group work.

Groups of participants can have the following activities, for example:

- Discuss questions or assignments.
- Carry out experiments.
- Prepare learning or demonstration materials (posters, charts, models, games, displays, etc.).
- Carry out a project.
- Prepare and perform a role play.

Group formation

Pay careful attention to the way a group works together; one or two group members may dominate the activity, so that some group members are left out, especially when it comes to planning and decision-making. Certain participants may always be given the least pleasant task to do; other participants may use the 'cover' of the group to avoid doing anything at all. Try to ensure that all group members share responsibilities and actions. You may need to reorganize some groups if it appears that they are not functioning well. Watch out for the situation where the most able participants always work together and those who have the most difficulty with their work always remain in their own group. Sometimes this is not a bad situation. It may offer an opportunity for giving additional tasks that go beyond the specific objectives for the lesson to the 'able' group. However, ensure that a less able group of participants is given sufficient attention, so that they do manage to complete the activity to a satisfactory level.

Tips for trainers

Group formation can be organized in many different ways:

- According to existing seating arrangements – participants can work in pairs or in groups of three or four, just where they are sitting.
- Random group formation – sometimes it is good to mix participants up into new groups. There are many ways of doing this. One is to simply 'number off' the individuals, counting 1,2,3,4, etc. depending on how many groups you need. Or you could give out pieces of card with names or numbers of groups written on them, and your participants must find the other members of their group.
- According to individuals' ability/experience – you may decide to form groups of participants who have the same level of ability or similar experience in a specific area of study.

- According to individuals' interest in a given topic – if different topics are to be discussed by different groups, participants can choose which group they would like to join.
- According to individuals' interest in their own choice of topic – this is discussion. Groups are then formed according to the interest of each individual in the suggested topics, or individuals can still suggest other activities.
- According to some other common feature, e.g. age group, gender.

Group work outcomes

Once the groups have finished their group work, the results need to be shared with the larger group of participants. This is mostly done during a plenary session so that participants can learn from each other and has to be facilitated by a resource person who makes sure that presentations stay focused on the learning outcomes. Group work outcomes can be presented in different ways.

Tips for trainers

- If the outputs have been written on **cards** and placed on a chart, they must be organized in some way. Cards usually work best with brainstorming activities (one idea per card, clearly written) because you can then move the ideas around after the exercise to form categories or groups of ideas. You can do this yourself, in front of the group or during a break period. See which ideas are similar or identical and group them together, physically, on the chart. Draw a line around each group of ideas and give a name or title to this category which describes it clearly, e.g. 'resources', 'methods', 'management', etc. Then have a short discussion on the categories of ideas in the plenary session.
- Alternatively, ask for volunteers from the participants to **categorize the ideas**, either on the spot or during a break. This is the better option, since the groups are constructed according to the perception of the participants rather than you, but it may take longer.
- Another option is to ask each group to present their output on **a chart** (give them some advice first about visualization, so that the charts are clear, attractive and easy to understand). A member of each group can then give a short feedback on what is on the chart to the plenary session. However, DO set a time limit, and ask the reporter not just to read what is on the chart. It is

more interesting for the reporter to mention something about the process they went through to arrive at this output, and to highlight the most important, key points.

- Instead of having verbal feedback from group representatives, a **'market' of ideas** is often more interesting. Each group should post their chart on the wall, and all participants can then spend around 20 minutes looking at all the posters. If participants have a comment or further idea, they can write their idea on a card or 'post-it' note and stick it on the chart. A member of each group can be available to answer any questions of clarification by individuals. Then have a final plenary session where you visit each chart with all participants, and quickly check the comments made by individuals. A short discussion can then take place.
- A more expressive approach is if you ask the groups to present their outputs as **a short play** or a **drama presentation**, which can offer a very effective and less threatening feedback for topics that are 'hot' or 'sensitive'. However, it will also depend on the capacity of the group and their familiarity with such methods.

Very often, some important points and issues are raised in these feedback sessions. Nevertheless, they are often not used effectively, or even forgotten as the training moves on. Keep any key outputs where all participants can see them and refer back to them when necessary. They can be referred to in the daily review, and can provide a good overview of what happened during a workshop.

Brainstorming

Why use brainstorming?

- To generate a range of ideas from a group of people, quickly and effectively.
- To overcome blockages in discussions.
- As a warm-up exercise.

Tips for trainers

- Set the question you want the group to answer.
- Present the question clearly to the group (ideally written up so everyone can see it).

- Explain that:
  - everyone can contribute an idea;
  - all ideas are valid – there are no 'wrong' ideas;
  - all ideas will be recorded in a written form, either on cards that are posted on a chart, or directly onto a chart or board.
- Have the resources that you need available:
  - Flipchart stand and paper, or
  - Pinboard and cards, or
  - Chalkboard or whiteboard
  - Pens/chalk, something to stick cards with.
- Ask the group to give ideas.If many people try to speak at once, you should moderate the discussion; try asking people to raise their hands before speaking. You can ask people to take turns in giving responses.
- Keep going until a big enough range of different ideas has been generated or until no new ideas are being offered.
- The group may come up with many diverging ideas. It will probably be necessary to organize these ideas into categories (see 'group work outcomes' on page 129).
- Thank the participants for their contributions.
- Link the activity to the next topic or point in the programme.

Snowballing

This group exercise gets its name because it involves a small group gradually getting bigger as you go through the activity – just like a snowball (where the snow is wet enough!). It allows an intensive discussion on a specific question or statement, and is quite energizing. The total time for such a group exercise should not take more than 30 to 40 minutes.

T i p s f o r t r a i n e r s

- Identify a clear question or statement, which the groups will discuss. (Make it very clear.)
- Divide the participants into pairs. Tell them they have 5-10 minutes to discuss the question, and produce a response on a paper or card. No plenary feedback is given at this point.
- Ask each pair to sit with another pair. The new groups of four should discuss (5-10 minutes) their responses to the same question, and again produce a joint response on a paper or card.
- Each group of four now joins with another group of four, to make groups of eight. Again, each new group discusses the same question (5-10 minutes). Each group now writes their responses on a flipchart or on cards, and posts these on the wall. Groups of eight are usually big enough, or the discussion will take too long.
- Each group gives a short feedback on their response in the plenary session (10 minutes).

Short, focused discussions

Very often, you will need your participants to discuss a very specific issue or question for a few minutes only. One difficulty with group discussions is that they often go on longer than you expected. So, give clear instructions to the group on the output of the discussion and how long they should take.

Examples:

- Group of 5 persons, produce 4 answers, take 10 minutes
- Group of 3 persons, produce 5 answers, take 8 minutes
- Group of 6 persons, produce 3 answers, take 7 minutes

Tip for trainers

You can form the groups in different ways (see Group formation on page 128). As for the other methods above, always make the question(s) as clear as possible.

Providing a demonstration

You can increase the likelihood of participants in a course both remembering and understanding by providing demonstrations. These can be done in a room or outside (farms, nurseries, forests, gardens…). They involve you or another person performing a technique under real or simulated conditions. Because participants may not only hear, but also see, and perhaps touch and smell during the demonstration, it is a very motivating form of teaching, and can encourage learning very well.

Demonstrations in agroforestry teaching are especially important because it is a very practical activity (although theory and concepts are of course important as well). Participants should have the chance to develop a range of practical skills as well as theoretical knowledge. They can actually see a skill or technique being used during a demonstration, and have the chance to ask questions or to give comments immediately. You may provide the demonstration yourself, or you may invite a local person with some expertise, such as a farmer or an adviser. One of the participants may be able to give a demonstration in a technique, which they have experienced, but that others are not familiar with.

Demonstrations can be useful in a number of ways:

- You can use them to teach a complex task or skill in a series of clear, practical steps.
- They can give participants more confidence in a difficult technique before they try it themselves.
- Some practical activities can be dangerous (e.g. the use of pesticides, climbing tall trees for seed collection) - demonstrations provide you with a chance to show and highlight dangers in a safe environment.

Tips for trainers

- Always be sure about how to carry out a demonstration before you show participants; practise it first until you are sure how to do it.
- Demonstrations may require a lot of organization and preparation beforehand. Have everything prepared before you start a lesson; otherwise, your

participants may lose interest. Some demonstrations use costly materials, so you should avoid wastage. Try to avoid using expensive materials, as these may not be available under normal farming conditions.

- Involve participants as much as possible during a demonstration. Ask questions regularly, and check that they understand the procedure. You can also involve participants as helpers in demonstrations (as long as it is safe to do this) or even as demonstrators; this increases interest for the whole group.
- Participants should have a chance to practise the skill or technique after they have seen the demonstration. This will help them learn more effectively.
- Sometimes demonstrations do not work - this reflects the reality of natural resources management, and you can always point this out if something goes wrong - but a good demonstration is worth a lot, so try to ensure success if at all possible. You can also demonstrate how to do something in the wrong way, so that participants can learn how 'not to do' something, as well as how to do it correctly. This is good to encourage learning, and increases the opportunity for feedback and questions.

Practical activities

Agroforestry is essentially a practical subject. It is important that you give your participants as much opportunity to practise skills and techniques as possible.

Practical activities can include the following:

- Working on a farm or garden, establishing a nursery, growing or planting trees, growing crops or rearing animals;
- Making and using simple machines and equipment;
- Carrying out experiments in a classroom, laboratory or field;
- Doing management tasks like keeping records, accounts, etc.;
- Working or meeting with local community members.

Tips for trainers

- As with demonstrations, practical activities should be well planned and well organized.
- Give support and advice to your participants as they carry out the activity.
- If you have a large number of participants on your course, you will almost

certainly need to divide them up into groups.

- Any practical activity should be carried out in relation to the classroom teaching. Often, it is hard for participants to relate practical activities to theory. In fact, the two should be linked together very closely. It is very important also to link the theory sessions to the practical experiences of the participants.
- Just as with theory lessons, you should have clear aims and objectives for practical classes. Your participants should have a very clear idea about why they are doing the activity, and what they are supposed to achieve.
- If possible, encourage participants to keep a record of what they have done, in a practical notebook or diary; this provides an opportunity for structured reflection.
- Observe your participants closely, offer advice where necessary, and encourage them to ask questions. If they are having difficulties, you should give them more chance to practise.

One difficulty with doing practical activities is that they are time and materials consuming. You need time to move to the practical area, to organize and allocate equipment, to carry out the activity and to bring all the equipment and materials back again. For this reason it is important to be organized and to allocate a realistic amount of time. Try to make sure that sessions have sufficient time for practical activities to be carried out and for cleaning up afterwards, whether the activity takes place in the classroom, laboratory or field. Encourage your participants to have a responsible attitude to materials, equipment and time, so that you do not have to run around yourself at the end of every session, clearing up after your participants have left.

Field visits

You will not be able to provide examples of every aspect of agroforestry practice within your immediate area where the training is being organized. Participants will understand concepts much better if they have first-hand experience of them. Therefore, you should try to take them to locations, ideally within a reasonable distance, where they can experience things for themselves. You may know a local farmer who has planted a new variety of tree, or another farmer who is combining

agroforestry trees with a new type of crop. Perhaps you could take the participants to a site where soil erosion is a particular problem, or to a place where farmers are marking out contour lines on a hillside.

Tips for trainers

- It is important that a field visit serves an educational purpose, and is not just a 'sightseeing' trip, although interest and enjoyment are important aspects of the field visit.
- Preparation is essential; you should organize the visit well in advance and inform anyone who should know about it.
- Visits take time, and you may need to make special arrangement in advance. You should discuss this with your participants first - some of them may have other commitments.
- You might find that one of the participants on the course has something interesting to show which other trainees would find useful as a learning experience.
- To prepare for a visit, you should always discuss the topic with the participants in advance. You could then ask them questions, which they should answer as a result of the visit, or give them a written sheet that they should complete.
- During the visit, encourage discussion and questions, and encourage participants to ask questions as well. When you return to the location of the training, have a review of the visit as soon as possible to ensure that the learning objectives have been achieved.

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Part II: topic 7
Training materials

Fast track

Key resource materials

Annexes

Annex 1 – Considerations to compare audio-visuals — Audiovisuals.doc

Annex 2 – Instructional Components — Instructional components.doc

Annex 3 – Evaluation tools for curriculum materials — 3a - evaluation form.doc

3b - Evaluation guide.doc

3c - evaluation criteria.doc

3d - Film and video evaluation sheet.doc

Training materials

Learning outcomes

After going through this topic, you will be able to:

- Identify and evaluate the most appropriate materials to support the achievement of learning outcomes.
- Adapt available materials to suit your specific needs or produce new ones.
- Use appropriate learning materials effectively, combined with relevant teaching content and methods.

Training strategies

There are many things to consider when developing, choosing and using learning materials. This topic helps you to think of some key issues when developing learning materials such as written materials, posters, charts, handouts, overheads, etc. It also relates to topic 5, which focuses on the relationship between content, methods and materials and gives some guidelines on how you may choose which materials to use. Finally, developing and choosing materials effectively are important, but using them is the real test. The best materials can be wasted if the trainer has poor communication and presentation skills, and so this topic has a very close link to topic 6 on methods of teaching and learning. As with teaching methods, you should not expect to have perfect materials the first time you use them. Always encourage feedback on your materials, and adapt them as needed, either to improve them, or to meet the learning needs of a specific group of participants.

If you are training other participants to develop, choose and use learning materials, you should ensure that they can go through a full process of developing an example of a learning material and then use it within a sample lesson in front of other participants for their feedback. Dealing with this topic only in a theoretical way will not enable participants to use materials effectively in practice.

Key content

How do we identify training materials?

- Based on clearly articulated training needs.
- Reflecting the curriculum developed for the learning activity
- Using available sources of information

What types and formats of training materials exist?

- Written or printed materials (manuals, textbooks, lecture notes, handouts…).
- Audio-visual materials – projected (slides, film, video, transparencies…) or not-projected (drawings, models, objects…).
- Advances in information and communication technology nowadays also allow people to develop electronic training materials using computers and the internet-world wide web.

How do we select training materials?

- Experience shows that:
  - Trainers often use 'available' training materials in support of their topic.
  - The content of the materials often determines the instruction.
  - Materials are mostly not 'field-tested'.
  - Little time and effort are spent on the selection of available materials.
  - Little is known about evaluation criteria to assess the usefulness of available and new materials.
- People learn mostly by what they see and experience.
- Good training materials must thus focus on participants gaining access to real or contrived experiences and visuals rather than on writing or hearing even though time availability often favours the latter.

What are the characteristics of 'good' training materials?

- They are developed for a specific purpose.
- They target a specific audience (educational level, experience, existing or desired knowledge).
- They reflect clear teaching/learning objectives and outcomes.
- Their content is technically correct.
- They are enhanced using various 'instructional components'.
- They are presented logically and systematically.

- They have been field-tested and evaluated.
- They are attractive to the users.

How to evaluate existing or new training materials?

- Content is evaluated from the points of view of:
  - Target audience
  - Technical correctness
  - Instructional components included
  - Organization
  - Illustrations
  - Propaganda and bias
- Format is evaluated from the points-of-view of:
  - Equipment and infrastructure required
  - Practical use and quality
  - Ease of use
  - Overall attractiveness

Tips for trainers:

- Time and timing are crucial for any training materials development effort in the context of a specific training event.
- In agroforestry and natural resources management, materials often need to be produced by teams of resource persons and this will require some coordination.
- Resource persons must be subject matter specialists and focus on content whereas a training materials coordinator will need to add value through a series of services such as editing or proof-reading, peer review, desktop publishing, illustrations, translation, printing, etc.

Recommended reading

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Developing, choosing and using learning materials

Introduction

Training materials are written or audio-visual teaching aids that are developed in support of a specific training activity and a well-defined target audience. Good training materials facilitate communication and support teaching and learning. They provide guidance to teachers and learners and will serve as a future reference or to facilitate self-learning.

There are many types of training materials. Written materials can be textbooks, manuals, lecture notes, etc. Audio-visual materials are static graphics, (posters, maps, charts, photos…) or active graphics, (chalkboard, magnet board, flip chart, flannel & Velcro board) or projected graphics, (slides, film, video, transparencies…) or objects and models. Advances in computing and information technology nowadays also allow the development of electronic teaching and learning resources that can combine text and audio-visuals for use in self- and distance learning.

Training materials are not developed in a vacuum, but form an integral and important part of the PCD cycle. Once course organizers have developed the aims, objectives and curriculum for a training event, it will be necessary to identify what materials are going to be needed in support of the various topics that will be taught. In a number of cases, such materials may already exist in one format or another. Agroforestry, even though an age-old practice, is a rather recently researched approach to land use. Therefore, there may be less available teaching materials that can readily be used, even though their number is growing rapidly.

The first step for any resource person who will be teaching an agroforestry related subject will be to identify what, if any, materials exist that adequately support the subject at an appropriate level for the audience. Selecting such materials will require some knowledge about evaluating teaching and learning materials using various criteria. Most often, existing materials may serve as a reference and need to be adapted before they can be used for a specific training event, topic and audience.

If no appropriate materials exist, resource persons will be required to develop their own. To do this seriously is a time-consuming effort that will require the services of several people. The overall production process will consist of several steps, including content development, value adding services (editing, desktop publishing, translation, graphics…), review, evaluation, field-testing, reproduction and distribution.

This section highlights the experiences and approaches of the World Agroforestry Centre to deal with agroforestry teaching and learning materials in the context of its training and education activities.

Identifying and selecting

Experience shows that resource persons tend to spend little time in identifying or selecting available training materials and that they have little knowledge about doing this. Once a resource person has been assigned a particular topic in the context of a training event, (s)he should conduct a search for materials on it. Many international, regional and national library resources and institutions that can help to find out what exists in terms of training materials or publications in support of a specific topic.

At the international level, the library and documentation centre of the World Agroforestry Centre can be a good start to look for materials specifically on agroforestry and integrated natural resources management. The Centre also houses the Regional Land Management Unit (RELMA), which has produced a vast amount of materials related to agroforestry and land use that can serve to facilitate the development of training materials. Four other organizations are also important for services in information and documentation. The Commonwealth Agricultural Bureaux International (CABI) produces three important databases, CAB Abstracts, Agroforestry Abstracts and Tree CD. The Food and Agriculture Organization of the United Nations (FAO) is responsible for the world's largest cooperative agricultural database, AGRIS. The International Union of Forestry Research Organizations (IUFRO) and the United Nations Environment Programme (UNEP) also contribute considerably to resources for agroforestry education. In addition, two governmental organizations provide vital resources of relevance to the production of teaching materials. These are the US Department of Agriculture whose database, AGRICOLA, is among the top three in world agriculture and the Dutch Royal Tropical Institute

(KIT) that produces the famous TROPAG and RURAL databases. In the area of current awareness, the Institute of Scientific Information's 'Current Contents: Agriculture, Biology and Environmental Sciences' is indispensable, as is the online journal 'The Overstory'. Most of the resources of these organizations are available online and in other formats.

At the national or country level, Ministries of Agriculture, Forestry and Environment as well as universities and other training or education institutions, non-governmental organizations, development projects, etc. can also be consulted to find out if certain types of training materials exist. Two important sources for tracing these institutions are 'Agricultural Information Resource Centers: a World Directory', published by the International Association of Agricultural Information Specialists (IAALD), and Europe's 'World of Learning'.

Any search will probably yield a number of useful materials and the next step will be to decide on which ones to select for a specific purpose. Resource persons often tend to use available materials as they are, and thus their content, rather than the specific aims, objectives and curriculum of the intended training activity, will determine the instruction. Such available materials are mostly not field-tested for the specific training. When selecting materials, one must realize that most people learn by doing and from what they see. Real or contrived experiences are a great deal better than demonstrations, exhibits or various audio-visuals even though the use of these is preferable over teaching by means of speech or written text only. The advantage of the latter is that a lot more content can be covered in a theoretical session presented by a resource person using written materials in support of it, since available time is often a constraint when implementing a training event. The vast majority of people also learn most effectively using their sight compared with the other senses. Therefore, the use of audio-visuals as a training support cannot be overstated.

The following are some characteristics of 'good' training materials:

- Above all, such materials are developed for a precise purpose, reflecting your own and the learners' requirements and conditions. Their purpose and objectives must be obvious.

- They target a specific audience in terms of levels of education and experience. For example, reading levels are very different for various age groups and education levels. Materials developed for novices in a certain area will be very different from those for knowledgeable and experienced people.
- Materials must include clear aims and objectives that reflect the ones of the training event as a whole, as well as specific subjects. See also topic 4 - Setting aims and objectives for a training course.
- Their content is technically correct and is logically and systematically developed and presented. Nothing is more disturbing to a learner than to spot mistakes in materials or to have them confuse rather than help in the understanding of a subject.
- Their use is facilitated through various 'instructional components' that help a resource person or a learner.
- Their presentation and format are attractive.
- They have been evaluated, using specific criteria, and have been field-tested in the context of a specific training event.

When selecting audio-visual training materials, in support of a specific topic, one must consider the following:

- What will be the audience in terms of size and level of education and experience?
- What are the infrastructure requirements to use certain types of materials?
- What equipment will be needed and is this available?
- How technical or difficult is it to operate the equipment or use the materials?
- What is the cost involved?

The table in annex 1 shows these requirements for various types of teaching materials.

When selecting or producing training materials, it is important to consider what 'instructional components' are presented that clarify their use.

Instructional components

Instructional components are those parts of the training materials that are not directly related to the content but facilitate their use for both resource persons and learners. An agroforestry video on technologies for example can serve as training material but on its own, trainers may wonder how best to use this. If a leaflet with an introduction, some user guidelines and test questions and answers accompany such a video, then these 'instructional components' will add value to the materials beyond the subject matter content.

There are many instructional components that can be considered for different types of training materials but care must be taken to select the most appropriate ones. Instructional components can be categorized as those related to:

- *Introduction:* overview, guidelines, table of contents…
- *Curriculum planning:* objectives, learning outcomes, skills, knowledge and attitudes to be developed…
- *Instructional planning:* suggested teaching time, teaching strategies, equipment and materials needed…
- *Resources:* reference materials, resource list…
- *Instruction:* glossary, transparency masters, video, slide sets, audio tapes, discussion questions…
- *Learner application:* learning activities, student worksheets, performance guide…
- *Evaluation:* quizzes, test items, answer sheets, evaluation standards or criteria, performance tests…

A list of possible instructional components is given in annex 2.

EXERCISE – Identifying instructional components

Small groups of participants discuss training material with a clearly specified content, format and audience. Using a list of possible instructional components (see annex 2) they consider the various categories and indicate for each one whether it will or will not have to be taken into account. They then select the 5 or 10 most important ones and prioritize them in terms of usefulness for that specific training material product.

In most cases, training materials developers will come up with 'learning or teaching objectives' as a top priority instructional component for most types of training material. This is only normal since it will be difficult to use a specific material if it is not clear why. The topic on *Setting aims and objectives for a training course* of this Toolkit provides some information on how to go about developing instructional objectives. It is obvious that objectives developed for a course, curriculum or topic will need to be reflected in the supporting training materials as well even though they will also need to be more specific.

For example, the objective of a lecture note on 'experimental agroforestry data management' originally read:

'To understand the importance of experimental data management in agroforestry research'

This broad, general objective, which cannot be 'measured', can be divided into four more specific ones:

- To define data management in the context of agroforestry research.
- To list and explain three main important reasons for proper data management.
- To list and describe the main steps in the data management process.
- To recognize data management problems in an experiment.

Remember that objectives must be Specific, Measurable, Attainable, Realistic and Time-bound (SMART), as we noted on page 100. They must indicate what a learner is supposed to be able to do after the instruction, under what conditions and at what standard of performance. Objectives will include behavioural verbs that can relate to:

- Sample tasks
- Study skills
- Analysis skills
- Synthesis skills
- General application

A shopping list of verbs useful in writing behavioural objectives is included in topic 4 – Setting aims and objectives, annex 1.

EXERCISE – Writing behavioural objectives

Looking at a specific training material that requires the development of clear instructional objectives, participants meet in small working groups and develop these for the material being considered.

Producing training materials

Process

Several models can be considered when developing training materials but most of them will require one or more of the following steps:

- *Needs identification*. Once the curriculum, subjects and learning outcomes of a course have been identified, course resource persons will need to identify the required training materials in support of this. If available, they will have to be evaluated and eventually adapted; if not available, it will be necessary to produce new ones.
- *Development of criteria/guidelines*. An agroforestry course will often require several resource persons and care must be taken to harmonize the training materials production process to obtain consistency in content and quality. This is best assured by a training materials coordinator who works closely on the overall process with course resource persons.
- *Author(s) identification*. In most cases, course resource persons will be the main authors of the training materials. This is especially true for agroforestry courses and topics since their nature requires multi- and inter-disciplinarity.
- *Content development*. This is the main responsibility of the resource persons since they are subject matter specialists and thus ultimately responsible for the quality of the content of the materials.
- *Review (internal/external)*. Peer review, and input by different stakeholders who have relevant expertise or experience, is an important step in the training

materials development process since it will enhance the quality of the materials. This review can be organized internally or involve outsiders. It is always useful to also include non-subject matter specialists or potential course participants to see whether they can correctly interpret the materials.

- *Value-adding services*. In many cases, it will be necessary to add services such as proof-reading, editing, graphics, desktop publishing, translation… to obtain high quality materials. These services can be very costly and this needs to be taken well into account when deciding on the production of new materials.
- *Field-testing and evaluation*. Once a good final draft becomes available, it can be field-tested and evaluated during an actual course so that changes can be incorporated for future courses.
- *Production and distribution*. The final steps in the process deal with mass reproduction and the distribution of the materials to participants and other interested parties. Again, this can be quite costly depending on the quality of reproduction and mode of distribution and must be taken into account at an early stage in the development process.

An individual with a good technical background to understand and look at content issues best coordinates the process of training materials development. This person will also have to be knowledgeable and experienced in instructional design, communication and publication. A training materials development coordinator will provide guidance to resource persons at the start of the development process and coordinate all other steps leading to the final product. Close collaboration with training resource persons is needed at all stages of the process in order to obtain a quality product appreciated by all.

Written materials

Most training courses will require the development of some written materials. Formats will be different from course to course and can be lecture notes, a textbook, a manual, technical leaflets, and so on. An important aspect is that the content must support the teaching and reflect the course and topic aims, objectives and learning outcomes. The following tips can be helpful when considering the development of a variety of printed materials.

Tips for trainers

- Based on the expected learning outcomes of the subject to be taught, develop a clear and logical outline of the document to be produced. Again, this needs to reflect the way the presentation(s) will be made during the training event.
- Develop a short and clear title that indicates what the subject is. Subtitles and other headings must also be short and to the point.
- Conduct the necessary research and collect all the source materials, references and other materials that will be needed to develop the content. Do not underestimate the time needed to produce good quality instructional text, in terms of research, information collection and writing.
- Produce the first draft of the text. Make sure it focuses on what is essential and avoid unnecessary elaborations. Consider the literacy levels of your audience; several tools exist to analyse the readability of texts for audiences with different educational levels (Fog index, Fry graph). The Fog Index looks at the number of words and sentences, average number of words per sentence, number of 'hard' words (words of 3 or more syllables, abbreviations and symbols) and measures readability of a given text in terms of years of schooling needed to read it with ease. The Fry graph looks at the average number of sentences and syllables per randomly selected 100 words in a text. Long sentences and words with many syllables are more difficult to read at lower educational levels. Constantly think of your audience – what do they know, what do they need to know, what will they understand, how can something best be explained?
- Identify the illustrations (photos, line drawings, graphs…) that will be needed to clarify the text. Provide clear captions that reinforce the message. Do not use more illustrations than really necessary and make sure they can be reproduced without loss of quality. Black and white photographs reproduce better than colour, line drawings can be clearer than photos and a sequence of illustrations can demonstrate motion. Illustrations must help readers to learn and stimulate interest in the topic.
- Have some people review the content of the text. Address their questions and comments and incorporate their proposed changes.
- Think of which 'instructional components' can be added to facilitate the use of

the document by learners or other resource persons.

- Where possible, let a specialist lay out the text and the illustrations so that it is easy to follow and attractively presented. Keep it short and simple (KISS principle) and provide for lots of 'white space'; densely spaced text documents can be discouraging to read and follow.
- When several authors contribute to the development of course materials, a coordinator (editor, proof-reader) must ensure some harmony for what is developed in terms of style, length and format.
- If materials will be used for several courses over a prolonged period, consider a new, revised edition when the content becomes out of date.

Audio-visual materials

Since most people learn by what they see (and do), the use of appropriate audio-visuals in support of a training topic is of paramount importance. Most teachers and lecturers will use overhead transparencies or slides (pictures, text) when presenting a theoretical subject; some may use film or video. It is beyond the scope of this Toolkit to provide guidance on film or video production since this requires specialist technical expertise.

Tips for trainers

The following tips may help in preparing the more common audio-visual aids (text and image slides, transparencies) used in support of a presentation:

- Audio-visuals must support important parts of the presentation, help learning and stimulate interest. They are a means, not an end in itself, and often complement the spoken word and written materials.
- Their content must be correct and reinforce the message they support.
- Audio-visuals should not show bias or be offensive to an audience.
- Colour, unless required for content should be used meaningfully and realistically. Consider legibility, contrast and harmony. Limit yourself to two or three colours. Colours have mental associations and provoke emotional responses. Cool colours green, blue, grey) are best for backgrounds; warmer colours emphasize the message.
- Text slides: Develop a clear title for the whole series and one for each slide.

Readability from a distance is the key. Choose a good size text font that can be read from a distance. Use short bullet points or sentences that summarize your key messages and no more than five to seven bullets per slide. Intersperse text slides with graphics and photos that make the point. Number the slides and mark them so that it is easy to put them in a projector tray.

- Photo slides: Select or take good quality photo slides that are correctly exposed, sharply focused, well composed and clearly show what is intended. Avoid distractions on a photo slide that divert the attention from the subject.
- Overhead transparencies: Same rules as for text slides. Print text, rather than handwrite. Photocopies of document text on transparencies hardly ever works. They offer the possibility to build up a final message using a sequence of individual transparencies. They can also be developed or finalized during the presentation while on the projector.

Evaluating training materials

Selecting available materials and testing newly produced ones will require their evaluation against a set of criteria related to content, usefulness and overall quality. Evaluation is needed to determine the suitability of specific materials in the context of a given training event. For newly produced materials, evaluation aims at providing feedback to producers and users alike and needs to focus on possible areas for improvement rather than rejection or acceptance.

Evaluation can be done using existing evaluation tools that have been developed for various types of materials. Most of these will need to be adapted in one way or another to reflect the characteristics of a specific material. Pending the type of material considered, such tools need to evaluate the following aspects:

- *Author(s).* Are the authors competent subject matter specialists? What is their background and experience? What is their publication record on the subject?
- *Target audience.* What audience is being targeted for a specific material? What is their expected knowledge or skill level, existing and desired? For text-based materials, what is their reading level?
- *Content.* Is the content technically accurate and up-to-date? Is the material presented in a logical sequence? Is the material consistent with the proposed

course curriculum, learning objectives and outcomes? Are the essentials covered? Are there too many elaborations that distract from the core content?

- *Format*. Is the material of good quality in terms of cover, binding, paper and resistance to wear and tear? Is it handy for the purpose it needs to serve (size, weight, sturdy)? Does it require the use of additional equipment or supplies that may not be readily available?
- *Usefulness*. Is it easy to use this material? Does it include instructional components that facilitate its use for teachers and learners?
- *Illustrations*. Is the material well illustrated in terms of quantity and quality? Do the illustrations facilitate communication and learning? Do they contribute to the message? Are the illustrations properly captioned?
- *Cost*. Is the cost of the materials justified by the instructional values they exhibit?
- *Overall rating*. If several materials on the same subject exist, it will be good to give an overall rating that reflects the suitability of a specific material for a specific training or education purpose and audience.

Relevant aspects to be evaluated can be developed into a questionnaire using a simple ranking (e.g. 1 to 5, disagree - somehow disagree - somehow agree - agree) or a yes/no rating. Evaluators should also be given a chance to formulate a final recommendation and to make comments that will allow course organizers and resource persons to decide on the use of a specific training material. Several tools that can be used to evaluate various training materials are included as annex 3(a-d)[1].

EXERCISES – Evaluating training materials

Participants are given a selection of available agroforestry training materials (slides, video, manuals, lecture notes…) and a number of evaluation tools (questionnaires). They then evaluate these materials in the context of a proposed training activity.

Participants can also develop an evaluation tool (questionnaire) aimed at obtaining useful feedback from other trainers or users on a specific training material.

Such exercises can be made even more relevant if participants bring their own existing training materials for evaluation by others or if such evaluation can be conducted looking at the final draft of a material under production.

Using training materials

Using training materials is very much linked to the presentation of the subject they are intended to support. Training materials, especially in agroforestry, are often time-bound and developers must make sure that they are regularly updated and that revised editions are made available.

Text-based materials can be given either well before, or at the beginning or the end of a presentation. If the subject is complex, having learners go through the materials before the presentation will allow a resource person to focus on the important learning outcomes that participants need to master and with which they may have difficulties. If the material is more aimed at self-study or reference, it can be given at the end of a presentation. This helps to avoid that learners will be distracted by reading it rather than focus on what is being presented or discussed.
Audio-visual materials will mostly be used in direct support of a presentation. Making a good presentation that keeps the attention of the audience throughout is an art that can only be mastered by practice and rehearsal. Not all training resource persons are born public speakers but many presentations can be improved by paying attention to the following important points:

- Rehearse, rehearse, and rehearse. The most common problem with many resource persons for short training courses is that they are ill-prepared to make a good presentation, especially when it comes on top of everything else they are involved in and thus pressed for time. Most people will prepare properly for a presentation in the context of a job interview and the same level of attention and preparation should go into a training presentation. A well-prepared and implemented presentation shows concern and respect for your audience and will be rewarded with undivided attention.
- Carefully select, or produce, the audio-visuals that you will use to reinforce the message of your presentation. Think about the required infrastructure (electricity, dark room…) and equipment and consider alternatives. Practice the use of the equipment required, nothing is more distracting than watching a resource person trying to figure out how to use a projector or a computer when it is needed during a presentation.

- Arrange the room so that all participants have an unobstructed view of yourself and your audio-visual support. Visibility and legibility are key for any audio-visual. If people cannot see or read them, their attention will fade away at the expense of the overall presentation and learning outcomes.
- Time and timing are again important for the use of audio-visuals in the context of the overall presentation and this requires rehearsal. It is useless to quickly show a couple of dozen slides as an afterthought at the end of a presentation.
- Use appropriate audio-visuals to actively engage the learners in the presentation; elicit participation, discuss graphics or pictures, request feedback.
- If you use slides or overhead transparencies, make sure they are numbered and in the correct order. Slides should be properly arranged in a tray and viewed before the presentation. Hold them by their frame and avoid contact with the film. If possible, give participants a hard copy of the slides or transparencies.
- Active graphics such as white or blackboards, flipcharts, etc. are rarely used these days but they can be very useful for smaller audiences provided visibility and legibility are taken into account, especially for flipcharts since these only have limited space on each sheet. Print letters rather than handwrite.
- Always turn to talk to your audience and not to your audio-visual equipment (board, screen…). Do not simply read text on an audio-visual. Use a pointer to direct attention to the part to which you are referring.
- If you travel to make a training presentation, make sure you carry your audio-visual support as hand luggage as not to get separated from it.
- There are several good publications on public speaking and making presentations that can be consulted to improve your skills in these areas.

EXERCISES – Using training materials

Participants or resource persons are requested to make a presentation on an agroforestry subject. Fellow participants and resource persons comment constructively on this performance and identify strengths and weaknesses. The presenter should also be given an opportunity for self-reflection on his or her own performance. Presentations can also be videotaped for comments.

Organize a skit on a 'bad' presentation including common mistakes that presenters may make and see if participants identify all of them.

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Part II: topic 8
Lesson planning

Fast track

Key Resource Material

Annex

Lesson planning

Learning outcomes

After going through this topic, you will be able to:

- Explain the value of lesson planning.
- Develop a detailed lesson plan or programme for a training course.

Training strategies

Lesson planning is a very practical activity. A lesson plan or session plan are identical concepts. It draws on basic educational concepts, and puts these into practice in a systematic way. Like all planning, you need to have appropriate information before you can really do it. This should come from the overall course design, which provides the broad framework for teaching and learning programmes. The lesson plan enables you to put to use this framework on a daily basis, or even hour by hour, if you make detailed plans. It is also the opportunity to plan how to combine the content, methods and materials to achieve very clearly identified learning outcomes. Course design and lesson planning will allow you to develop the final programme for a training event.

Key content

Delivery of the training course

This is a critical aspect of curriculum development. However, it is often neglected, not monitored or not evaluated, and is one main reason why learning often fails to take place.

Developing a lesson plan

A good lesson plan helps teachers and trainers to:

- Ensure that the curriculum is delivered effectively.
- Plan in advance with input from learners.
- Introduce new content, methods or materials.
- Reflect on the teaching and learning process and outcomes.
- Reach consensus on the learning outcomes to be achieved.

- Understand the process of learning.
- Link to previous and future learning.
- Reflect on how and what they are learning.

What should a lesson plan contain?

- The class or group you teach (year, number of students or trainees), subject and topic, when the lesson will be held.
- The main aim of the lesson (What you hope to achieve.)
- The main learning outcomes (What the participants will be able to do by the end of the lesson.) - this will come from the overall curriculum.
- A breakdown of the lesson into different elements. Allocate time to each element to make sure it fits into the lesson. The lesson may include:
  - The introduction of the lesson, during which you should find out the prior knowledge of the participants as well as making a link to a previous lesson.
  - The presentation of the main theme, perhaps a demonstration or a practical activity for your participants.
  - A conclusion and a link to the next lesson.
- A list of the teaching and learning methods you will use in each part of the lesson.
- A list of the teaching and learning materials you will need for each activity.
- A guide to how you will evaluate the learning in the lesson.
- Additional notes or comments based on your reflections.

Recommended reading

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Lesson planning

The terms 'lesson' and 'session' can be used interchangeably. Here we will refer to the lesson, but session can apply just as well.

The user of the curriculum (who, in a PCD approach, should have been intensively involved in the curriculum development process) will be guided by it, and by the scheme of work. There is a need to plan during the implementation phase as well, because it is often difficult to translate the planned curriculum into reality in the intense and dynamic environment of a classroom or a field situation. One way to do this is to develop a 'lesson plan' for each lesson; this practice is highly recommended for teachers or trainers who are new to teaching, or who are implementing a new or revised curriculum for the first time. Annex 1 gives an example of a 'lesson plan' for a session on observing tree roots in a soil profile[1].

A lesson plan is a detailed description that covers:

- The class or group you teach (year, number of participants), what subject and topic, when the lesson will be held.
- The main aim of the lesson (What you hope to achieve.)
- The main objectives (What the participants will be able to do by the end of the lesson.)
- A breakdown of the lesson into different elements. This may include the introduction of the lesson, during which you should find out the prior knowledge of the participants; the presentation of the main theme, perhaps a demonstration or a practical activity for your participants; and a conclusion. Allocate time to each element to make sure it fits into the lesson.
- A list of the methods you will use in each part of the lesson.
- A list of the materials you will need for each activity.
- A guide to how you will evaluate the learning in the lesson.

[1] [1] From Rudebjer P, Taylor P and Del Castillo RA eds. 2001. A Guide to Learning Agroforestry- a framework for developing agroforestry curricula in Southeast Asia. Training and Education Report no. 51. Bogor: ICRAF.

Tips for trainers

- Share the lesson plan with participants, perhaps as you introduce the lesson. It gives an overview of what has been planned, which is helpful for the learning process.
- Use the lesson plan to help you monitor your teaching; you may find that you were overambitious, especially regarding time.
- After the lesson, it is a good idea to make notes that describe how the lesson went—what worked well, what could be improved and what you could do better or differently next time.
- Modes of and criteria for evaluation need to be formulated very early in the process of curriculum development. These should be negotiated with participants as far as possible.
  - What are the indicators of achievement?
  - Have there been any changes in knowledge, skills and attitudes (KSA)?
  - If so, to what extent?
  - What factors contributed to the results?
  - How can these be used to improve the lesson delivery?

Part II: topic 9
Evaluating and assessing training courses

Fast track

Key resource materials

Evaluating and assessing training courses

Learning outcomes

After going through this topic, you will be able to:

- Explain the need for evaluation and assessment of training courses.
- Design assessment instrument(s) for an agroforestry training course.
- Develop an evaluation system for a training course.
- Use participatory methods to evaluate training sessions.

Training strategies

Evaluation is often discussed in a rather theoretical way. In fact, it is very practical. Rather than being seen as simply an extractive tool used to provide data-on-demand, evaluation can actually foster continuous learning and enquiry. If learning is a natural part of life, then evaluation within a continuous process of action and reflection, should become part of life's journey. As we presented the concept of adult learning based on a continuous process of action-reflection, evaluation can support this procedure of self-reflection and a sharing of those reflections with others. It can enhance our openness as individuals to listen to the experience of others and to integrate what is learned through this as part of our personal knowledge. It is an individual, internalized development, and part of the human condition. Because it is so central to our lives, this topic moves away from the traditional view of evaluation being simply a measurement of what others can and cannot do. Instead, it focuses on evaluation as a central part of the entire learning process, and should be based on a participatory approach.

Key content

What is evaluation?

- Evaluation is an essential and continuous process. Often it is thought to be the final stage of curriculum development; in reality it should be an integral part of the entire curriculum development process.

- Evaluation considers what the curriculum is worth to those who are involved in its development, how well the curriculum is working, and how it can be improved, for present learners and for future ones.
- Evaluation should be participatory. All relevant stakeholders should be involved in the evaluation of the curriculum. The methods, criteria and indicators for evaluation need to be formulated very early in the process of curriculum development. Information needs to be collected and analysed, and conclusions drawn.

Tips for trainers:

When designing an evaluation system for training courses, ask the following key questions, based on the 'six helpers':

- **What** is to be evaluated?
- **Why** is the evaluation necessary?
- **Who** should be involved in the evaluation?
- **When** should the evaluation be carried out?
- **How** should the evaluation be carried out?
- **Where** should the evaluation results be used?

Since we evaluate learning through a change in behaviour, a trainer should also ask:

- How have we (all participants) changed during this course?
- Against what do we measure this change?
- How can we ensure that key stakeholders really participate in the evaluation process, and own its outcomes?

The CIPP (Context, Input, Process, Product) model of curriculum evaluation (see page 175).

There are so many elements involved in teaching and learning which can be evaluated. For this reason, the CIPP model is useful since it provides a framework for a full evaluation of the curriculum context, inputs, process and products. By

considering all these elements in an integrated way, we can carry out a useful and effective evaluation of a training course.

Assessment of learning

As part of the overall evaluation process, we need specifically to find out if the learners are actually learning (changing their behaviour) as a result of the training. This will show both the learners and us whether the training has been effective. Assessment is a means of finding out what learning is taking place. As well as specific knowledge, skills and attitudes, it may be important to measure other changes in behaviour related to 'personality', social skills, interests, learning styles, etc.

Methods of assessment

There is a very wide range of assessment methods used in teaching and learning. Some are oriented towards quantitative measurement and behaviour of learners (achieving the learning outcomes), and are often applied formally, perhaps through 'examinations'.

These include:

- Objective testing (multiple-choice, short-answers, selection and recall…).
- Open-response questioning.
- Practical skill testing.

Other methods are more empowering of the learner. The learner may negotiate the type of assessment, and also be responsible for much of it. Self-assessment and peer-assessment are important approaches, and may include the following methods:

- Reflective journals and diaries.
- Visualized responses (Likert scales, 'dots on charts', posters with presentations…).
- Success stories.
- Attendance at classes.
- Evaluation of perceived changes in individuals after the course, compared with their condition before the course
- Feedback to early submissions of assignments.
- Critical incident questionnaire.

- Case studies.
- Portfolio preparation.

Tips for trainers:

- Whichever methods are used, it is vital that you have clear and agreed criteria for assessment.
- The more you involve learners in identifying and negotiating these criteria, the deeper the learning is likely to be.

Recommended reading

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Evaluation of learning

What is evaluation?

Evaluation is an essential and continuous process. Often it is thought to be the final stage of curriculum development; in reality however, it should be an integral part of the entire curriculum development process. Evaluation examines the 'values' of the curriculum being used, including the nature of the content of the learning ('what knowledge is worthwhile?') and of the aims themselves ('what should this programme of education and training be achieving?'). It is more than assessment, which measures the performance of individual learners (especially the knowledge, skills and attitudes acquired). Evaluation attempts to look at what the curriculum is worth to those who are involved in its development, how well the curriculum is working, and how it can be improved, for present learners and also for future ones.

As with other aspects of the curriculum development process, evaluation should be based on the principle of participation. All relevant stakeholders should be involved in the evaluation of the curriculum. The methods, criteria and indicators for evaluation need to be formulated very early in the process of curriculum development. Information must be collected and analysed, and conclusions drawn. All these activities should be carried out in a participatory way.

Why is evaluation necessary?

Training evaluation can help to define the training objectives more sharply, get rid of unnecessary training content, ensure that training methods meet the requirements of trainees, relate them to their training needs and reduce training costs. Evaluation is part of the whole process of transformation that is education and training. It can ask whether the aims of the curriculum and the learning objectives have been achieved, what learning has taken place, and how. It can also ask what difference this has made to the learners and to their lives, their work and to their relationships to others.

Evaluation may be either summative or formative. Summative evaluation concentrates partly on whether aims and objectives have been achieved and is usually done soon after the end of the programme, since the information required

needs to be obtained while it is still fresh in the minds of those involved. Impact evaluation is carried out later, in order to allow enough time to pass so that the longer-term rather than the immediate effects can emerge. In particular, it will often need some time for the views of those involved to become clear and be put into perspective.

Formative evaluation is the on-going process of assessing and re-assessing the progress being made throughout the course, the direction in which the course is heading, and the speed at which the aims and objectives are being achieved. It can also be called 'monitoring'. Although formative evaluation will be undertaken throughout the course by the teacher-trainers, often in association with the learners, provision should be made in the schedule of work for more systematic opportunities for review and assessment. Regular orientation is needed throughout the course to gauge how far the course has reached and how much further there is to go. By highlighting the areas that are successful and identifying those which need revision, alterations to the course can be made. The aim of formative evaluation is to provide the basis for course improvement, to determine the need for modification and ultimately to lay the foundations for future planning. It is a continuing process of critical reflection on experience leading to action.

Who should be involved in curriculum evaluation?

Objectivity versus subjectivity

Traditionally, evaluation has been governed by the need for objectivity. Subjective evaluation, relying on the emotional responses of individuals, has not been thought to be acceptable. Most forms of evaluation tend to be undertaken by outside agencies, to achieve impartiality. The value of some forms of subjective evaluation has now been recognized, for education and training is designed to meet human needs, and these are by their very nature subjective. In addition, learning itself involves the whole person, including the feelings, for example through learner satisfaction.

Subjectivity may at times limit the effectiveness of the evaluation, however. People who are intimately involved with any process sometimes find it hard to stand back and see what is actually going on. For this reason, training programmes have been evaluated both internally by the participants and externally by outsiders.

Internal evaluation

Internal evaluations have been conducted by those most directly connected with the curriculum such as teachers, learners, policy makers and education experts (e.g. from the Ministry of Education or Agriculture or from academic institutions). This ensures that the evaluation has credibility since those contributing to it will have a first-hand working knowledge of the programme. Such evaluation is mainly formative, done continuously through the programme.

In practice, most teachers and trainers are evaluating their work all the time, especially if they are reflecting critically on what they are doing. They often do it almost unconsciously, or informally, when observing or talking with learners. If this kind of evaluation is carried out in a conscious way it will be much more effective. Learners also can be active evaluators. It is sometimes difficult to involve the learners in the evaluation process, partly because of teacher-learner relationships and partly because of the perspectives held by the learners about the purposes of the evaluation. Learners often feel that they themselves are the subject of the evaluation rather than the curriculum. Being involved in the evaluation puts the learners on an equal basis with the teachers and enables them to see learning for what it is. It is an important part of the learning process. Through it, the learners may see how much progress they have made, what measures of achievement they can use for themselves, and how much further they have to go before they reach their own goals. Such internal evaluation will become a motivating force in the learning process.

External evaluation

Most forms of summative evaluation are undertaken by external agencies, such as examination boards, or independent evaluators. An external evaluator is likely to have a higher degree of independence and objectivity, and will often possess a wider experience of other courses and programmes. This is helpful since it is possible to obtain a broader view of the effectiveness of the curriculum.

External evaluators are usually brought in from outside the situation in which the curriculum is being developed. If so, then it will be important that they should take into consideration a wide range of views about the purpose of the programme from those who have been concerned with its development rather than make their judgements on their own. External evaluation is nearly always based on assessments associated with examinations and tests given to the learners. In these cases, the examiner has the power over the learners since the examiner decides what will be assessed and how. Such assessment does not need to be a one-way process, however. Teachers and trainers may assess the learners; equally, the learners may assess their teachers and trainers. Again, learners can assess themselves and their peers. The idea of peer and self-assessment is becoming more popular.

In a PCD approach, if we are to involve other stakeholders in the development of the curriculum, then we need to involve these same stakeholders in the assessment and evaluation of the programme itself. Those who have developed the curriculum will need to know how well it is working. Regular review meetings of the stakeholders will be useful in formative evaluations; and their involvement in the summative evaluations will also be necessary. Participation in assessment and evaluation is thus a valuable tool to enhance the effectiveness of programmes of education and training. It is essential if participatory methods are employed to develop the curriculum.

What should be evaluated?

There are two main approaches to evaluation. Some evaluators consider only specific aspects of the system, for example, the methods of teaching and learning employed or the achievement of specific objectives, and the knowledge, skills and attitudes which have been acquired by learners. Other evaluators prefer to collect a much greater variety of data, in order to provide a basis for present and future curriculum development. This means that evaluation should not just be about the measurement of success or failure, but about a full understanding of the educational process itself. This type of evaluation may need to be more descriptive, interpretative or judgmental.

It is necessary to monitor and evaluate the entire curriculum development process. This is likely to be done at set intervals, and involve all the relevant stakeholders. Decisions must be taken about the kind of information that should be collected, and how and by whom it should be collected, analysed and interpreted.

In practice, the curriculum developers are likely to have expertise in methods of evaluation, which they can use to advise and, in some cases, to train other stakeholders in the technical skills of evaluation. The capacity of different stakeholders to participate in the evaluation process will then be improved, as will their capacity to make decisions more effectively. The curriculum developer may work as co-ordinator or facilitator of the evaluation process, but should share control and involvement in all phases of the evaluation with other stakeholders.

Participatory approaches to evaluation can help to ensure that any evaluation conducted will lead to concrete results. Participation requires and encourages commitment. If all the stakeholders are to be involved in the design of the curriculum, they should also participate in the design and implementation of the evaluation of that process. Their increased motivation will help to make certain that the outcomes of the evaluation process will be worthwhile.

Effective and participatory evaluation is a key to successful development of the curriculum. It is a mechanism, which can allow all the stakeholders access to the decision-making process, and enables them to have a say in what is being done now, and what will be done in the future. In order for evaluation to be carried out, therefore, the institution in which the curriculum is being developed must be organized in such a way that evaluation becomes part of its everyday life and work. This is a challenge for all institutions and individuals involved in teaching and learning.

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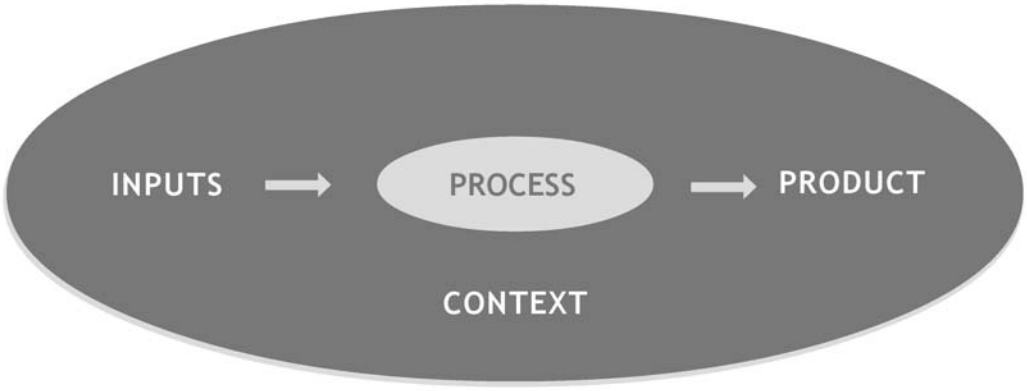
The CIPP evaluation model

One very useful approach to educational evaluation is known as the CIPP, or Context, Input, Process, Product approach, developed by Stufflebeam (1983). This provides a systematic way of looking at many different aspects of the curriculum development process. There is a risk, however, that it may be directed only by 'experts' or 'outsiders', and for this reason it is vital to identify ways in which various stakeholders can be meaningfully involved.

The 'CIPP' model of evaluation



Basically, the CIPP model requires that a series of questions be asked about the four different elements of the model.

Context

- What is the relation of the course to other courses?
- Is the time adequate?
- What are critical or important external factors (network, ministries)?
- Should courses be integrated or separate?
- What are the links between the course and research/extension activities?
- Is there a need for the course?
- Is the course relevant to job needs?

Inputs

- What is the entering ability of students?
- What are the learning skills of students?
- What is the motivation of students?
- What are the living conditions of students?
- What is the students' existing knowledge?
- Are the aims suitable?
- Do the objectives derive from aims?
- Are the objectives 'smart'?
- Is the course content clearly defined?
- Does the content (KSA) match student abilities?
- Is the content relevant to practical problems?
- What is the theory/practice balance?
- What resources/equipment are available?
- What books do the teachers have?
- What books do the students have?
- How strong are the teaching skills of teachers?
- What time is available compared with the workload, for preparation?
- What knowledge, skills and attitudes, related to the subject, do the teachers have?
- How supportive is the classroom environment?
- How many students are there?
- How many teachers are there?
- How is the course organized?
- What regulations relate to the training?

Process

- What is the workload of students?
- How well/actively do students participate?
- Are there any problems related to teaching?
- Are there any problems related to learning?
- Is there effective 2-way communication?
- Is knowledge only transferred to students, or do they use and apply it?
- Are there any problems which students face in using/applying/analysing the knowledge and skills?
- Is the teaching and learning process continuously evaluated?

- Is teaching and learning affected by practical/institutional problems?
- What is the level of cooperation/interpersonal relations between teachers/students?
- How is discipline maintained?

Product

- Is there one final exam at the end or several during the course?
- Is there any informal assessment?
- What is the quality of assessment (i.e. what levels of KSA are assessed?)
- What are the students' KSA levels after the course?
- Is the evaluation carried out for the whole PCD process?
- How do students use what they have learned?
- How was the overall experience for the teachers and for the students?
- What are the main 'lessons learned'?
- Is there an official report?
- Has the teacher's reputation improved as a result (or been ruined!)?

Methods used to evaluate the curriculum

There are many ways to evaluate the curriculum. Here are some common ways. Several of these would normally be used in combination:

- discussion with class
- informal conversation or observation
- individual student interviews
- evaluation forms
- observation in class/session of teacher/trainer by colleagues
- video-tape of own teaching (micro-teaching)
- organizational documents
- participant contract
- performance test
- questionnaire
- self-assessment
- written test

References

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Stufflebeam DL. 1983. The CIPP evaluation model for programme evaluation, *in* Madau GF, Scriven GF and Stufflebeam DL Eds. *Evaluation Models: Viewpoints on Educational and Human Services Evaluation.* Boston: Kluwer-Nijhoff.

Taylor P. 2003. *How to Design a Training Course – a guide to participatory curriculum development (to be published Spring 2003).* London: VSO/Continuum.

Assessment of learning

As part of the overall evaluation process, we need specifically to find out if the learners are actually learning (changing their behaviour) as a result of the training. This will show us whether the training has been effective, which ultimately is the most important issue. Assessment is a means of finding out what learning is taking place. As well as specific knowledge and skills, we might also like to measure other changes in behaviour related to 'personality', social skills, interests, learning styles, etc.

There is a lot of debate about how to assess learning, and especially about how to evaluate performance. Our objectives give us guidance on what to assess, because they are written in terms of what the learners should be able to do. Based on these objectives, it is very useful to identify all the activities and skills which the learners will carry out, the conditions under which they will perform these activities, the possible results which might be obtained, and the standards by which their performance will be measured.

The measurement itself can be done in different ways:

1. Ask the learner to recall facts or principles (e.g. What is 'x'?).

2. Ask the learner to apply a given or recalled fact or principle (e.g. How does x help you solve this problem?).

3. Ask the learner to select and apply facts and principles to solve a given problem (e.g. What do you know that will help you solve this problem?).

4. Ask the learner to formulate and solve his or her own problems by selecting, generating and applying facts and principles (e.g. What do I see as the problem here and how can I reach a satisfying solution?).

In (3) the learners are choosing the means to a given end. In (4) the learners make their own meanings within the structure of their own ideas. This fourth level can be said to be 'meta-thinking', and is a very high level of learning.

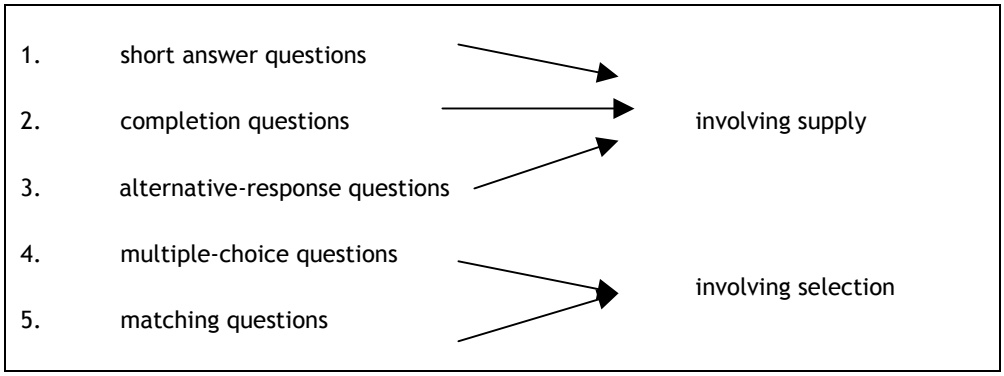
Once again, we need to stress the importance of participation, and this is especially important in evaluation and assessment. Learners should be actively involved in both the development of learning objectives, and as much as possible in their own assessment. In many education systems, assessment is used as a tool for 'sorting' students for selection purposes (progression to a higher level of education, higher rewards, etc.). Assessment where students are compared with each other is known as 'norm-referencing'. It is much better if learners are clear about what they need to learn and are clear about what they have learned, by setting their own targets and monitoring their own progress. Of course, teachers and trainers should advise the learners, and guide them in order to help them learn; this is a key role of the teacher. Assessment of learners in relation to a particular target or level of performance is called 'criterion-referencing'.

Assessment tools

Objective tests

These do not relate to the learning objectives, but are termed this way because the assessment should be 'objective', or free from bias. For an objective test, there is only one correct answer. This makes writing such tests quite difficult! The other problem with objective tests is that they tend only to assess lower levels in the domains of learning, particularly those of knowledge and comprehension. It is possible to write objective tests for higher levels but it becomes increasingly difficult, especially in a practically oriented subject like agroforestry.

Five types of objective test are commonly used:



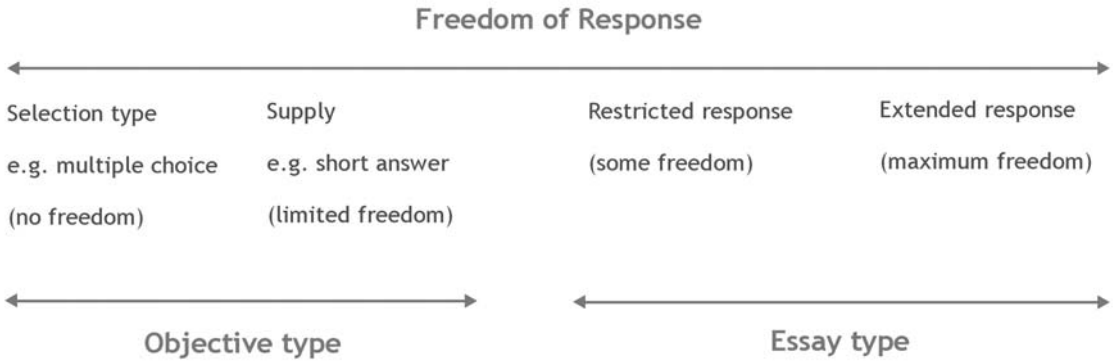
The way in which these questions are set is crucially important. It is always a good idea to pre-test questions on others, e.g. colleagues, a sample of learners, etc. All public examination questions are pre-tested to ensure that the answers are those that are expected.

Restricted and extended response

There are several types of these. They differ from objective tests in that the answer cannot be predicted exactly, although obviously certain information is expected in the answer. Restricted response answers are restricted by content and by form. They are normally concerned with a smaller aspect of the subject area and therefore deal with fewer objectives than the extended response answer. The way in which the topic should be tackled is also specified, e.g. 'list five factors...' or 'explain in no more than two paragraphs...'. This type of answer is sometimes called the 'short answer', or 'structured' question.

Extended response answers, or 'essays' have fewer restrictions on content and form. There may be restrictions on length and time allowed, but the content can be as wide as the examiner decides. This of course makes marking that much more difficult.

If the range of possible types of test from the objective to the extended response type is placed on a continuum, it will appear as follows:



Although less objective tests take longer to mark, they do take much less time to set; this will be a deciding factor when deciding what proportion of each type of question will be used in an examination.

Practical skills testing

This is of great importance in agricultural and forestry-related education, since at least half the learning time should be allocated to practical work. This should therefore be reflected in the assessment procedure.

In order to assess a skill it is necessary to break down the skill into its component parts. This is known as skill analysis. The various parts can then be assessed in order to indicate whether the objectives have been achieved. The objectives themselves must be carefully devised so that the assessment is purposeful.

Areas of practical work that can be assessed are:

- skill in observation and recording observations;
- ability to assess and interpret the results of practical work;
- ability to plan practical procedures and techniques for solving particular problems;
- manipulative skills;
- attitudes towards practical work.

There are a number of assessment methods which can be used for practical skills:

- set exercises;
- project work;
- course work;
- oral questioning;
- assessment by impression (observation).

The nature of practical assessment makes it difficult to perform externally. Internal assessment is therefore frequently used; the teachers or trainers assess the learners and then either use the results themselves or, in the case of public examinations, forward the results to an examination board. The tests may be moderated by an external examiner to ensure that standards are comparable between different institutions.

Reliability and validity of assessment

A problem still lies with those areas of learning which are more difficult to assess, such as diagnosis and solution of problems and the implementation of solutions, the ability to make and take opportunities and the ability to be creative. Higher levels of learning become progressively more difficult to assess on these grounds. With objective testing there tends to be little variation produced by the assessment instrument itself, assuming it is well formulated. This means that questions should not be ambiguous or allow guessing to yield the desired answer. With restricted and extended responses however, the learner can interpret the question in many ways and answer in many more ways that are different. The result is a lack of consistency in marking. As questions become less objective, the answers become more subjective. It may be argued therefore that objective testing is more valid. Even if the assessment instruments are thought to be valid, there are many other factors which may affect the learners' performance, e.g. personality influences, 'tactics', gender and social differences, etc. It is very difficult to achieve total reliability and validity because of these factors.

Reliable assessment allows one to make reliable comparisons across groups and over time, and objective testing is justly popular since it may approach this goal, within reason. Objective testing is, however, the least valid way to assess a learner's ability to analyse, synthesize and evaluate. The answer is to use as many forms of assessment as possible depending on the resources and time available. Evidence of learning should be collected from a wide variety of sources, ranging from standardized tests to daily informal observations.

Therefore, the purpose of assessment is to enable the teacher or trainer to 'know' the learner, and to allow the learners and teachers to know themselves. However, the results of assessment are frequently used as a means of selection for future education or employment. What is inferred about a learner by a 'grade'? A learner who achieves a norm-referenced 'B' has proven to be 'better than' some of the others, but at what? Similarly, a learner who achieves a number of set criteria has proved to be capable of these, but what else can he or she do?

Self and peer assessment

There is a movement towards a more complete use of assessment than the mere award of a final grade or a pass certificate. This involves a much more participatory approach to evaluation, where learners either assess themselves, or each other.

There are a number of different forms of this type of assessment:

- Reflective journals and diaries (very useful, but difficult to encourage learners to express their personal feelings rather than purely intellectualizing their thoughts for the benefit of the teacher/examiner; also time consuming for teachers to read – students could submit short excerpts for feedback and/or for marking).
- Visualized responses (Likert scales; dislike strongly, dislike, neutral, like, like strongly, 'dots on charts', posters with presentations…).
- Success stories (useful, but may be misused, by individuals or organizations, as self-publicity).
- Attendance at classes.
- Post-course and pre-course retrospective evaluation (how do the learners compare their own state of knowledge after the course with their knowledge before the course began?).
- Case studies (also a good teaching method).
- Portfolio preparation (use of the learner 'profile', where both the learner, and those teachers and trainers who have come to know the learner can comment and provide indicators of performance over a long period, in many different areas of the learning programme).

Whichever methods are used, it is vital to have clear and agreed criteria for assessment. The more that learners are involved in identifying and negotiating these, the deeper the learning is likely to be. The fear exists in some institutions, however, that enabling students to select the mode of assessment and to be responsible with their peers, for carrying out much of that assessment, will lead to increased marks, and problems with accreditation and accountability to external bodies.

Learners need to learn about assessment and evaluation. Individual conditioning and group dynamics will influence the extent of openness and willingness of participants to be critical about themselves and others within the learning context.

Teachers and instructors need to model behaviour that does not reinforce traditional power relations, and they should attempt to help participants gain confidence as they embark on ways of assessment which are quite new to them. There may also be issues of culture, gender and language that must be addressed through open dialogue and sensitivity. Once again, facilitation of the overall learning process becomes a key success factor.

Tips for trainers:

- Give sufficient time to the development of skills and understanding by participants of assessment and evaluation; one-off or short courses make this more difficult to achieve. If short courses are necessary, try to run several over a period of time, so that participants build up their critical and reflective skills.
- Introduce the discussion on assessment and evaluation at the very beginning of any learning process.
- Include evaluation as an integral component of a programme design.
- Encourage participants to select and manage assessment processes as individuals and with their peers as much as possible.
- Involve and work with stakeholders at all levels of the system (giving special attention also to senior managers and administrators) when introducing innovative assessment or evaluation processes; their engagement will depend on the design and perceived uses of the evaluation.
- Use documentation as a means of sharing experiences and lessons learned from evaluation processes, in order to foster the application of learning.

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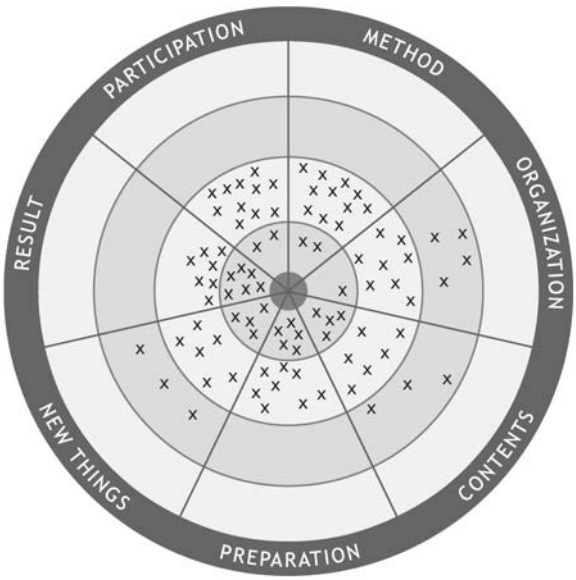
Training evaluation tools

Just as there are useful tools for assessment of learners, there are also useful practical and participatory tools for evaluation of a training course. They can be used either during it, or at the end. Topic 10 – Organizing short training activities, also gives some examples of training evaluation tools. The following are examples:

Evaluation dartboard

This is a very useful tool to gauge participant feeling on a range of issues. On a large piece of paper or flipchart, draw the shape of a dartboard, as shown below. Decide on what aspects of the event you wish to be evaluated (you could also ask participants to suggest what aspects they would like to evaluate). Participants should make a mark in each segment of the dartboard according to their level of satisfaction. The nearer the mark is to the middle of the board (the 'bull's eye'), the higher the satisfaction. The further away from the middle, the lower is their satisfaction. After participants have placed their marks, you can discuss with them about the result. This method provides a snapshot of feelings. It can be used either at the end, or during a training event or workshop. However, it is not very useful for evaluating processes.

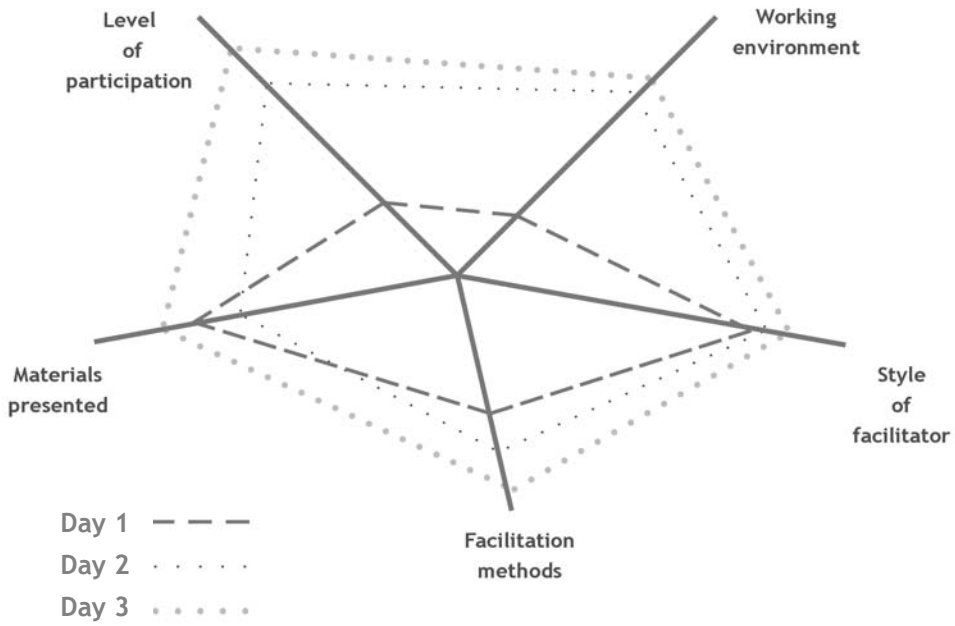


Spider's Web

If you are working with a small group, it is often very useful to monitor processes. It is also useful to have a tool that can encourage discussion between group members about how an event is progressing over several days, or to consider the overall learning process. The spider's web is a series of lines running outwards from a central point like the spokes of a wheel. Each line should relate to a separate criterion, e.g. level of participation or working environment, and be addressed in response to a specific question. For example, 'To what extent has our learning been affected by…?' If participants are familiar with this type of evaluation, it is best if they select the criteria themselves through a discussion.

The group should then agree on a scale on each line, and discuss about the extent to which that criterion has been having an effect. When this has been done for each criterion, and a mark placed on each line at the appropriate point, another line can be drawn between each point. This exercise can then be repeated at different stages of the training or workshop, with new points and connecting lines added. After several times, the resulting diagram will look like a spider's web. The group can discuss what they feel about changes mapped on the web (some criteria may be having more or less effect), and what measures could be taken to improve or sustain the process.

For example: To what extent has our learning so far been affected by these different criteria?



Moodometer

This is a very simple and well-known evaluation tool. On a large piece of paper, make a diagram like this:

'My feeling about the course/workshop at the moment is:'

	x x	x x x x x	x x x x x x x x	x x x x x

Participants place a cross under the picture that represents best how they feel at that particular moment. Again, this gives a very visual impression of how people are feeling, either during or at the end of a workshop. The result, especially the extremes, should be discussed if it is done during the workshop, to bring out suggestions on improvements or changes that could be made.

Written comments

Evaluation tools that require participants to place only a mark on a paper can be very useful because they are quick and give an instant visual impression. However, they are limited in the amount of information they give. They do not allow participants to express their feelings in more detail. One simple way to encourage participants to express their views in an anonymous way (if that makes them feel more willing to be open) is to hand out different coloured cards. On one card, participants could write 'positive' comments such as the following:

- what they liked most during the event;
- the most important thing they learned;
- what they will apply when they go back to their workplace.

On another colour of card, participants could write 'negative' or 'less positive' comments on:

- what they liked least about the event;
- what they would like to be changed before the next similar event;
- what they did not find at all useful about the event.

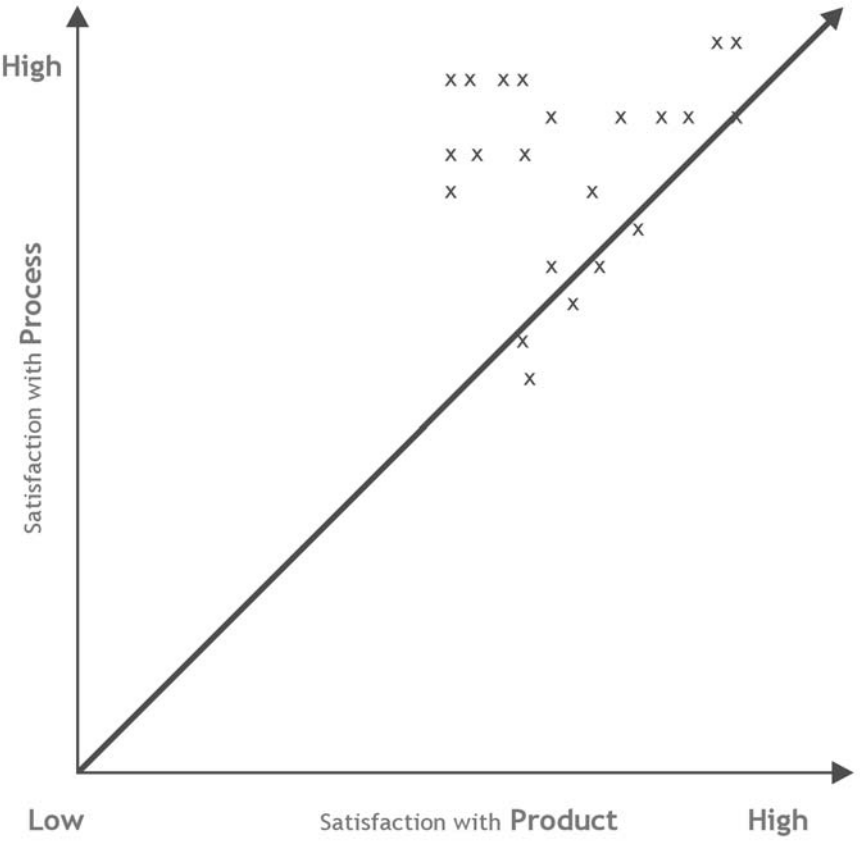
After writing on the cards, participants can stick their cards onto a wall or large paper. The facilitator or a small group of participants can then categorize the cards into key points, which could be discussed. Again, this tool can also be used during a workshop, for example at the end of a day, so that it could give the organizers a chance to respond, if that is possible. Participants should also be aware, however, that it is not always possible for every comment made to be attended to - the organizers will try to do the best they can with the resources they have available.

Process versus product

There is often criticism of training courses or workshops that a product was achieved, but at the expense of the process, for example by minimizing participation. On the other hand, it frequently happens that an event, which is very strong on process may fail to achieve a high quality or expected product. This evaluation tool enables participants to express their feeling about the combination of process and product.

A simple graph should be drawn on a large piece of paper (see the black arrow and axes in the diagram below). Participants are then asked to place one cross on the graph according to their perception of both the process and the product.

For example:



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Part II: topic 10
Organizing short training activities

Fast track

Key resource materials

Annexes

Annex 1 - Application Form — Application form.doc

Annex 2 - Course Brochure — Course brochure.doc

Annex 3 - Applicant Information — Applicant information.doc

Annex 4 - Logistics Checklist — Logistics checklist.doc

Annex 5 - Information for Participants — information participants.doc

Annex 6 - Registration & Reimbursement Forms — Registration form.doc

Annex 7 - Programme Course — Programme.doc

Annex 8 (a,b,c,) - Evaluation (Theoretical sessions - Fields visits & exercises) — 8a-sessions.doc

8b-field visit.doc

8c-field exercise.doc

Annex 9 - Final Evaluation	Final evaluation form.doc
Annex 10 - Certificate	Course certificate.doc
Annex 11 - Personal Action Plan	Personal action plan.doc
Annex 12 - Small Grants Scheme	Small Grants brochure.doc
Annex 13 - Participant Follow-up Survey	Survey.doc

Organizing short training activities

Learning outcomes

After going through this topic, you will be able to:

- Prepare the logistics and deal with organizational issues for a short course.
- Organize resources (human, physical, financial) effectively and efficiently.
- Monitor the training event throughout the stages of planning, delivery and evaluation.
- Follow-up on a training event.

Training strategies

This is a very practical topic, which deals with the organization of short courses. Most course designers have a very good understanding of the educational concept and methodologies, which are needed to make training effective. There are many other factors, however, which will have an impact on the success of a training course, and can have a major influence on the satisfaction of participants, such as accommodation, travel arrangements, living allowance payments, food, even the organization of a social event. The World Agroforestry Centre has gained a lot of experience of organizing national, regional and international training events, and some useful tips and resources are presented here which should help you to prepare for almost every eventuality.

If you are training others in how to organize short courses, the focus should be on all the practicalities involved in this. To facilitate the tasks, checklists and tools for specific events can be developed. The best practice is to organize a short training event and keep a diary of what went well and what went wrong to help improve in the future. The more experience gained through practice, the better a course organizer will be able to deal with all eventualities.

Key content

What are the different steps/phases that need to be considered when organizing a training activity?

- Planning and preparation.
- Implementation and monitoring.
- Follow-up.

Which teams to create to assist with the organization of the course and to deal with content and logistic aspects related to it?

- Course coordination team.
- Technical or content committee responsible for content and quality control.
- Logistics committee responsible for overall logistic planning, organization and implementation.

What are the responsibilities of those involved in the technical committee?

- Course budget development.
- Aims, objectives/ learning outcomes and curriculum design.
- Lesson planning and programme development.
- Participant identification and selection.
- Resource person identification.
- Training materials development.
- Delivery aspects and quality control.
- Participatory evaluation and assessment design.

What are the responsibilities of those involved in the logistics committee?

- Tracking course expenditure and accounting.
- Provision of information to participants and resource persons.
- Facilitation of participant selection.
- Liaison with resource persons.
- Assisting in the training materials development and production process.
- Logistic aspects of course preparation and implementation.

- Implementing evaluation and assessment.
- Narrative and financial reporting.
- Course follow-up.

What activities need to be considered while implementing the course?

- Participant arrival.
- Course secretariat.
- Registration procedure.
- Course opening.
- Daily activities.
- Ice-breakers and energizers.
- Monitoring.
- The unexpected.
- Evaluation and assessment.
- Course closing.

What should be done after a course?

- Dealing with requests.
- Reporting.
- Providing feedback.
- Impact assessment.

Tips for trainers

- Planning, organizing and implementing a course requires some experienced and dedicated people organized to deal with content and logistics.
- Time and timing are of crucial importance in the organization of any training event.
- Use common sense and be flexible, there are no real hard and fast rules governing the planning, organization and implementation of a training event.
- The better prepared all involved are, the easier it will be to conduct the training.

Recommended reading

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Organizing a short training activity

No matter how much time and effort went into all the other aspects related to a training event, as described in this training Toolkit, ultimately, the success of any such event will depend largely on how well this is organized and implemented.

There are no hard or fast rules in organizing and implementing short training courses and each event can be expected to be quite different from a previous one. Common sense and flexibility must prevail at all times. A lot will depend on the available resources, both human and financial, that can be deployed. This topic broadly represents the experiences of the World Agroforestry Centre in organizing short training courses, conferences and workshops. The training events organized by the Centre are mainly designed for international participants/professionals who have already a specific and solid technical background. These training events are therefore quite different in nature from those in a more rural setting (e.g. for a group of small scale farmers wishing to improve their output through diversification in crop growing). Although, the major principles for organizing training activities remain the same, it is clear that the proposed steps and activities described in the following chapter are based on the experience of the Centre. No doubt, these will apply in other settings, provided that the local circumstances are considered. Therefore they will need to be specified and adapted for each particular group-training event.

Before the course – planning and organizing

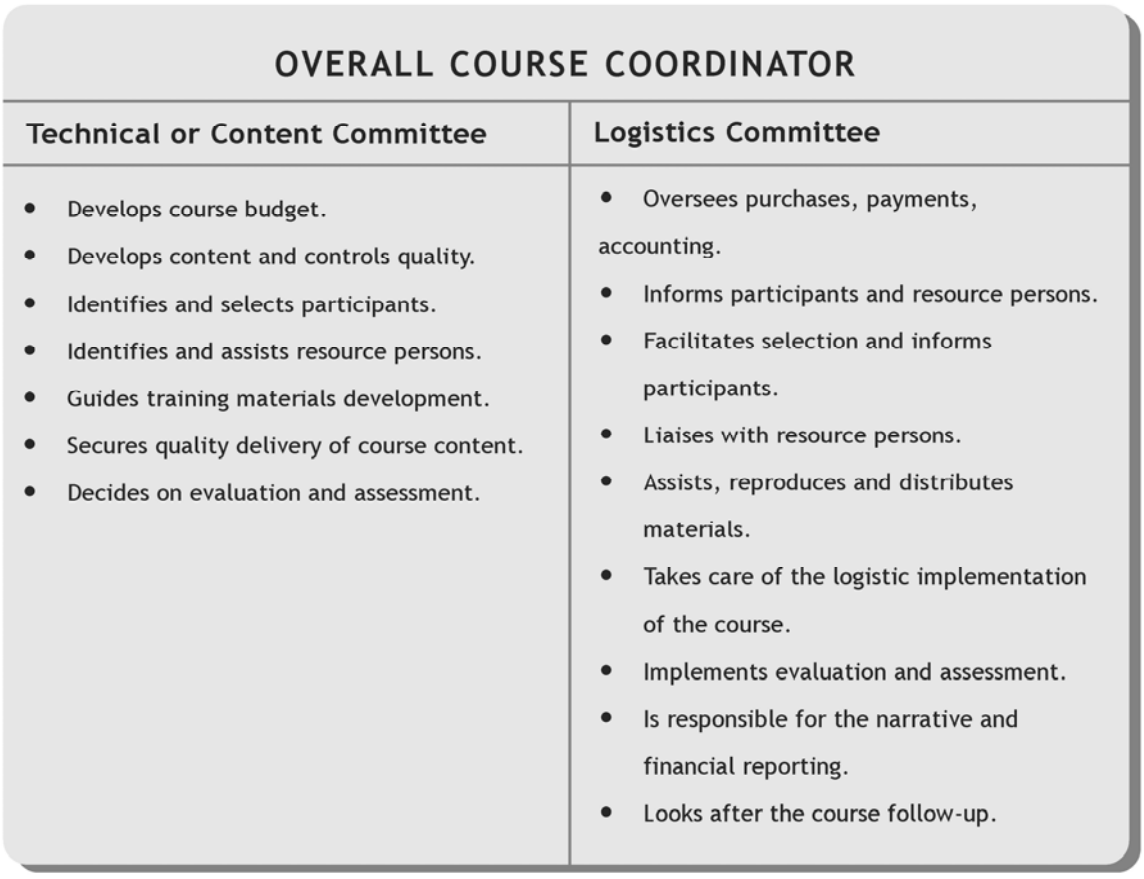
Irrespective of how a training event came into existence or who initiated the idea, once the decision to implement it has been made, human and financial resources need to be mobilized and organized so that the event can take place under optimal conditions. Since its creation, the World Agroforestry Centre has always had a team of people dealing with training and education. This team works very closely with the scientists, and other professional and support staff, in order to implement the Centre's training and education mandate and strategy.

Good organization and implementing of a training event requires the involvement of many people and thus there is a need to properly coordinate this. For courses

involving a small number of participants, or training events which are organized regularly by an institution, it may not be necessary to initiate large committees or a complex organizational system; audience size, duration, location and complexity of a course will all help to determine the most effective and efficient way to organize a course. Usually, however, the amount of organization needed to make a course work really well is underestimated, and so in this topic we show how good organization can really make a difference to the entire learning process.

Basically, there will be two main categories of issues to be dealt with by the course coordinator(s): those related to 'content' and those related to 'logistics'. Even though these can be expected to influence each other, it is better that they are dealt with by different people under a single coordinator in order to avoid wasting precious time.

At the Centre, a training event is coordinated by an overall course coordinator assisted by a team or committee of technical 'content' people, eventually headed by a technical course coordinator, and a team dealing with logistic aspects and implications. Their responsibilities can be summarized as follows:



Technical or Content Committee

This brings together the people who are directly concerned with the development of the technical content of the training event and thus mostly constitutes of key course resource persons under the leadership of a 'technical course coordinator' in collaboration with the overall 'course coordinator'. The committee first meets to discuss all course related aspects that require decisions and actions. Subsequent meetings will take place as and when the need arises and a final meeting right before the course starts will make sure that all is set for the event. Such a committee deals with the following main issues:

- **Budget**. Organizing and implementing short training courses, workshops and conferences, especially if they are regional or international in scope, can be costly affairs. It is therefore of paramount importance to have a well-defined budget for each event and arrange for the proper accounting of these training funds. Such a budget can be very detailed but most often will cover the following items:

- **Tuition cost**. This is often not considered but it is important to know exactly how much staff time is required to implement a training event and at what cost. Even if this is not a direct charge to the event, it will give a better idea of the real cost of training.
- **Travel**. This should cover all expenditure of resource persons and participants to travel to the venue(s) of a training event (air or road travel, stopovers, local transport, taxis, visa, baggage allowance, etc.).
- **Accommodation, meals and incidentals**. Covers the cost of those involved in the training event while staying at the course venue(s).
- **Training infrastructure**. This covers the cost of the training hall and rooms as well as the necessary utilities and equipment. Even if available at no cost, it may again be useful to include this (cost of renting similar facilities) to determine the real cost of the training.
- **Stationery and supplies**. The cost of all materials used by participants and resource persons for a course.
- **Contingency and overhead costs**. This is mostly given as a percentage (10-30%) of the overall course budget. It will cover unforeseen expenditure as well as certain indirect course related costs incurred by the institution that cannot be covered under the other budget lines.

Once the course organizers have developed the budget, a person from the logistics committee takes charge of this and reports to the overall course coordinator.

(S)he liaises with financial services within the organization, develops claim forms, collects receipts and arranges payments. At the end of the training event, a detailed financial report must be prepared. It may have to be shared with the donor funding the activity.

- **Course curriculum and programme**. This is the most important task of the technical committee. Based on the need for training in a specific subject area, key organizers, resource persons and other relevant stakeholders must agree on the course aims, objectives (learning outcomes) and a curriculum. Based on the latter, this committee also advises resource persons on relating and sequencing content, methods and materials for teaching and learning, choosing and using appropriate

teaching and learning methods, selecting course participants, evaluating and assessing the course. They provide guidance in all these areas, which are described in more detail in the other topics of this Toolkit, to all resource persons participating in the event and are generally responsible for content and delivery quality control.

The technical committee, in collaboration with the overall course coordinator, also produces the final version of the detailed course programme (see example in annex 7) reflecting the curriculum and all other activities that will take place during the course (see also topic 8 - Lesson planning). A well-designed course programme should create a balance between different types of activities, even at the risk of disturbing a logical sequence, in order to constantly engage the participants and keep their attention at all times. Days or weeks of day-long, theoretical sessions in a classroom setting can actually result in participants feeling tired, demotivated and bored, leading to less being learned.

- **Time and timing**. Looking at specific requirements and the availability of course participants and resource persons alike, the committee needs to agree on the best time of the year to implement the event and its optimal duration. Once this is known, a clear schedule of events leading to the implementation of the course needs to be developed so that all activities are dealt with in a timely manner. Proper planning and organization of a training event will vary from one event to another but easily requires between 6 to 12 months. Major events such as international or regional conferences, courses or workshops may even require 1 to 2 years if timely participation of all concerned is to be secured. In our experience, this aspect is often neglected leading to improvisation, last-minute and haphazard decisions that adversely affect the quality of an event.

- **Participants**. Through the training needs assessment and/or the development of the course aims and objectives, the broader target audience for a training event will have been identified. However, the final group of participants will be much smaller and consists only of a representative sample of this target audience. Therefore, care should be taken to select the best possible group of participants based on specific course requirements and criteria.

  Most training events organized by the Centre bring together 15 to 40 participants. Larger groups are more difficult to handle, especially for participatory and hands-

on, practical training events when a group of 20 is usually sufficient.

The course organizers must have information on the participants and the latter need to know about the training event itself to be able to assess its interest in the context of their work and employing institution. Where possible, participants will have some input into the course design, in the lead-in to the course itself as described earlier in this Toolkit.

- **Application form**. Information about prospective course participants can be obtained using a standardized form (see example in annex 1). Such a form will solicit information about a candidate's necessary bio-data,employing institution, contact address(es), language(s), education, past and present professional experience and eventually publications produced. The form can also be used to gauge the interest and justification of a candidate to attend, as well as list her/his expectations from attending the event. Next to playing an important role as a stakeholder in the whole training process, employing institutions also need to have a say in who will best represent the institution for a specific training event. They need to authorize the participation of their candidates and make sure that the training will ultimately benefit the institution as well as the individual.
- **Course brochure**. A simple course brochure (see example in annex 2) must allow a prospective candidate to see if a training event will address individual and institutional training needs. This brochure gives information on the background of the proposed activity, including its justification, and also on the course title, venue, dates, programme, resource persons, participant profile, activities, conditions of participation and a person to contact for more information. The more specific and clear the information, the easier to apply and select participants. Pending the availability of funds, such a brochure can be illustrated and printed.

  The course brochure and application form are widely distributed to potential institutions and individuals that stand to benefit from the event. For some training activities, a broader distribution can be envisaged using specialized press, the media or other communication avenues.
- **Selection of participants**. One of the logistics team members compiles all application forms in a binder(s) or database and summarizes the most important characteristics and information on a datasheet (see attached

example in annex 3). Selection is mostly undertaken by the technical course committee. Before or during the selection panel, this committee agrees on clear and prioritized selection criteria and develops a shortlist of potential candidates. Next to the suitability of a certain candidate for a specific event, panel members may want to balance gender, origin, experiences and other criteria considered useful for the activity or the institution. It is always good to select a few additional good candidates in case selected candidates drop out for one reason or another.

- **Resource persons**. The issue of identifying training resource persons will most probably have been dealt with when developing the course curriculum, aims and objectives since this will raise the obvious question of who is the best possible person to teach a specific subject and develop its supporting learning materials. However, problems may arise if later on specific resource persons are not available, either due to foreseen or unforeseen circumstances. Hence, it is important to think of alternatives.

  Ideally, resource persons for specific topics come from within the institution since this is one of the main comparative advantages in organizing a specific training event. If this is not possible, course organizers may want to consider external resource persons who can be subject matter peers in other institutions or former trainees who have attended a similar training event. Since most course participants will be experienced, they too constitute an important pool of resource persons and, with proper guidance, can share their knowledge, skills and experiences with other course participants. Sometimes it can also be useful to include farmers or extension staff as resource persons for a specific training event.

  Resource persons will need the following information from the course organizers in order to effectively contribute to the training activity:

  - What are the curriculum aims and objectives of the training event? How does their specific subject fit into the overall programme of the event? How does it link to others? Are there risks of overlap, repetition or contradiction?
  - Who are the participants? What is their level of education and present knowledge about the subject? What other useful knowledge is available about them that may affect how to more effectively teach the subject (origin, gender,

work experience, expectations, etc.)?

- What are the practical implications of their involvement in the training event (venue, time, travel, available training infrastructure, etc.)?
- What kind of support or assistance can they get from the course organizers?

- **Training materials**. The development and use of the training materials in support of a training activity is the main responsibility of the training resource persons. If possible, they can be assisted by various other persons dealing with coordination, editing and audio-visual support, reproduction and so on. Topic 7 – Training materials, provides more information on how to handle this.

  Again, timing is of crucial importance and course organizers must make sure that all materials will be ready and available before the training starts. All too often, this tends to be neglected leaving course participants with some last-minute handouts or no materials at all. They then have to spend time on writing down what is being presented and are distracted from following the proceedings.

  Once the materials have been reproduced, it is up to a resource person to decide at what stage they will be distributed. Whether this happens well before, at the beginning or at the end of the course or presentation is entirely up to the resource person. In some cases, they find it useful for participants to read their materials well before the course or presentation so that the latter can focus on the important learning points and discussions rather than the A to Z coverage of the topic. This approach stimulates learning and promotes active participation, which is of paramount importance when dealing with knowledgeable and experienced adult learners.

Logistics Committee

Once the technical committee has had its first meeting, the implications of its decisions and proposed action need to be translated into logistic arrangements. This is best dealt with by a small group that brings together all those involved in the logistic aspects of training course planning, preparation and implementation under the leadership of the overall course coordinator. The latter also makes sure that relevant issues related to this are communicated to the technical committee. At the Centre, a 'logistics checklist' is developed to facilitate and coordinate the work of this committee (example in annex 4). This checklist lists the activities that need to be dealt with, the person(s) responsible – with a single individual taking the lead -, the milestone dates for each activity and comments on progress, issues, bottlenecks, etc.

In terms of course preparation, the logistics committee needs to deal with the following:

- **Participants**. Even though participant identification and selection is a task for the technical committee, it is the responsibility of the logistics committee to circulate course information (announcement, brochure, application form) to interested institutions and prospective candidates, to facilitate the selection procedure and to inform course participants about the next steps to take to secure their participation.

  Successful candidates have to confirm their participation as soon as possible (e-mail, phone, fax). Unsuccessful candidates must also be informed about their status as soon as the final, confirmed list of participants is available. Informing unsuccessful applicants can also be taken care of by including a sentence in the course brochure indicating that 'only successful candidates will be informed' or that if candidates do not hear from the course organizers by a specific date, they must consider their application as unsuccessful.

  Successful candidates need to be informed about all further steps needed to secure their timely participation in the event. This is best done through an appointment letter specifying clear conditions of participation as well as any action required from them prior to attending the training event.

- **Travel arrangements and transport**. Most training events will require some form of travel to assemble at the training venue and where needed between this venue and the accommodation of the participants. Staff of the logistics committee must make the necessary confirmed return bookings and advise participants accordingly. They should also make sure that participants get their tickets in good time and deal with all other necessary [international] travel requirements (visa, health regulations, immigration formalities, etc.).

  Transport will include airport pick-up/drop-off and daily arrangements to ferry participants between their accommodation and the course venue(s). Make sure that those responsible for this transport have a clear schedule and keep time in order not to inconvenience course participants. Likewise, participants and resource persons must have the courtesy to respect such arrangements and not inconvenience one another and those in charge.

- **Accommodation**. Once the dates and venue(s) for the training event are known, accommodation arrangements have to be made. Most training events, especially regional and international ones, will require participants and resource persons to assemble at a specific venue for a number of days or even weeks and this will require suitable accommodation, preferably at a single location. Ideally, this should be as close to the training venue as possible in order to avoid additional local transport. The training budget will determine what type of accommodation can be afforded but care must be taken that participants and resource persons can attend the event in relative comfort. Single room occupancy on a bed and breakfast arrangement and a possibility for some distraction after hours is preferred. Accommodation must be booked well in advance and participants or resource persons must be informed about the arrangement in terms of costs paid for by the course budget.

- **Training room(s) and infrastructure**. Most training activities will require participants and resource persons to assemble in a training room for variable durations. A quiet, well-lit and well-ventilated, or even air-conditioned, room that can also be darkened to allow for the use of projected audio-visuals, must be chosen. Such a room must have sufficient seating capacity for all participating (and even some observers), so that they can comfortably attend theoretical or classroom sessions. Good interaction and participation will also require an appropriate seating arrangement. Round tables, U or V shaped arrangements are more suitable than typical classroom or auditorium arrangements in parallel rows. Grouping participants around several tables may also serve the purpose of enhanced interaction and participation. The same applies to break-up session rooms where participants meet in smaller groups to discuss or work on assignments. Where possible, also identify a smaller room near the main venue to house the secretariat. Usually, theoretical sessions will require a reliable electricity supply. Also, think of some tables that can be used to display or distribute materials and some facilities for the resource persons that will allow them to comfortably make their presentation (lecture stand, table, chair, platform).

- **Equipment, materials and supplies**. Most training events will require various audio-visual equipment in support of the presentations; black or white boards, overhead, slide and computer projector(s), flipcharts and easels, display boards, computer(s), TV monitor and video cassette recorder. The equipment must be tested and in working condition and accessories, spares and supplies needed to operate it must be available throughout the event. Resource persons must timely inform the logistics committee about their specific requirements and they must be familiar with the operation of the equipment. Provide some time for practice and rehearsal prior to the presentation.

  Make sure that all materials and supplies (conference bags, identification badges, stationery, flipcharts, transparencies, film, posters, etc.) are timely ordered and available at the start of the course. Check with the resource persons whether they will have any special needs related to this.

- **Meals and coffee/tea breaks**. Lengthy theoretical sessions and programmes need to be interspersed with short breaks (15 to 30 minutes) that allow participants to acquaint, stretch, interact and socialize. Again, to avoid interrupting the flow of events timekeeping is of paramount importance. Depending on the course budget and infrastructure, light refreshments can be offered. A day-long session will also require a lunch break and, ideally, this opportunity should be used to keep participants on the premises so that they can further socialize and interact. This should be organized at the venue of the course, if possible, to avoid additional transport and the dispersal of participants, which may affect timekeeping. Meal and break arrangements must also be taken into consideration for fieldwork and day-long excursions (packed lunches, refreshments, water). Provide drinking water for course participants and resource persons throughout the duration of theoretical sessions. Be considerate of participants' and resource persons' cultural background and eating/drinking habits.

- **Extra-curricular events**. In the case of longer-term training events, it may be useful to provide some opportunities for activities outside the course curriculum and programme. These can be cultural events, visits to sites of interest, sports, dining, cocktails, etc. The purpose is to provide additional opportunities for

socializing and interaction beyond the classroom. Participants must be timely informed about these events and may be required to register and eventually pay for them. For longer courses, it will also be useful to allow participants to look after their personal requirements related to banking, shopping, mail, laundry, etc. that may be impossible to deal with after working days and hours or on weekends. The course secretariat or logistics team may be able to assist.

- **Course secretariat**. Throughout the training event, it will be useful to have a course secretariat that deals with the necessary day-to-day activities during the course and responds to queries and requests from participants and resource persons. This should be coordinated by a single individual, known to all, who liaises between all concerned and directly reports to the course coordinator(s) as and when needed. Responsibilities can be liaison with resource persons and participants, communication, preparation of documents, reproduction of materials, distribution, claims, travel arrangements, transport, emergencies, etc. The secretariat should be equipped with a computer and printer, telephone, photocopier and any other equipment that will allow it to function properly in the context of a specific event.

During the course – implementing and monitoring

Provided the training event was well planned and prepared, course implementation should be relatively straightforward. The main task of the course coordinator(s) and the logistics committee will be to make sure that participants are well looked after, comfortable and feel genuine concern about their well-being while attending the event. No matter how excellent the content and the resource persons, unhappy participants – for good reasons – may learn less easily.

- **Participant arrival**. Make sure that participants are met when arriving at the venue of the event and that they know exactly what to expect. There is nothing more disconcerting than to arrive in a strange place and not knowing what to do next. It is useful to prepare a welcome letter as well as a leaflet providing important information that participants receive upon arrival (see example in annex 5). Regional and international events will require travel arrangements and immigration formalities that need to be considered well before arrival.

- **Course secretariat**. This will be the 'nerve-centre' during the implementation of the whole training event and will be the main point of interaction between course organizers and participants. Those in charge must be well organized and capable of prioritizing and following-up on all requests from course organizers, resource persons and participants. For courses involving a large number of participants, a minimum of two persons attending to these secretarial needs is not a luxury. Often the first and last few days of a course are more demanding in terms of assistance required. Outsourcing certain activities (photocopying, binding, typing, etc.) can also be an option provided such services are available, reliable and included in the budget.

- **Registration**. Course participants and resource persons will need to register their presence at the start of the training activity. This can be done using a simple registration form (see attached example in annex 6) that can also be used to verify specific information about a participant that may not have been clear from the application form (e.g. for certificates, databases,…). The registration procedure can also be used as an additional briefing for course participants, to request specific action required from them (return travel confirmation, submission of claims, poster preparation, etc.) and to distribute materials (detailed programme, bags, identification badges, stationery, training materials, etc. – see also the 'logistics checklist' in annex).

- **Course opening**. Opening a training event can be informal or formal depending on local customs and institutional arrangements. Regional and international courses often require more formal opening sessions since these serve to also welcome visitors to a country or institution. Identify a suitable guest of honour to officially preside over the session, invite other key persons to attend and identify a master of ceremony to coordinate this session. Make sure all concerned are well-informed in good time about the event and their expected role. Depending on the event, the opportunity of a course opening session can also be used to introduce course participants and resource persons and to take a group photograph.

- **Daily activities**. The detailed course programme (see example in annex 7), developed in collaboration with the technical committee and timely distributed to all course participants and resource persons, lists all activities (theoretical and

practical sessions, demonstrations, poster sessions, field visits, fieldwork, meals, breaks), that will take place during the event with a clear indication of dates, starting and ending times, activity labels and person(s) responsible. Course organizers must be at hand to introduce individual resource persons, especially for their first time presentation, and to make sure that time is kept. No matter how interesting, sessions should not be allowed to run over time since this will inconvenience other resource persons and participants and hinder the smooth running of the event. At no time should participants or resource persons feel abandoned or left without a person in charge.

- **Ice-breakers and energizers**. Bringing together groups of people that have never met and keeping their attention and active participation going throughout a day and the whole event, can be challenging and will require the implementation of ice-breakers and energizers at selected times. These are short structured activities that are not necessarily related to the training per se but that warm-up, motivate, challenge, acquaint and energize. They should not take more than 15 minutes (maximum 30) and should be well selected, effective, and, where necessary, prepared. Do note that the use and appreciation of some of these activities is often culturally dependent. Not all people feel comfortable engaging in some of them and you should use your discretion when organizing them. Some references on the subject are listed under the recommended reading (see 198).

- **Monitoring**. Once the training event has started, course resource persons will take a leading role in its implementation but the course organizers should carefully monitor the event and take corrective measures where and when needed. Constant interaction with participants will allow them to detect where things are going wrong and participants as well as resource persons should feel free to provide feedback at all times. The participants may identify a representative, or several ones on a rotating arrangement, to express the feelings of the group. A flipchart and pens at the entrance of the main training room can also allow anybody to express feelings of satisfaction or disappointment at any stage. Care must be taken to address the issues raised even if beyond the control of the course organizers.

- **The unexpected**. No matter how well a training event has been planned and prepared, there will always be a number of unexpected events, big or small, that will affect its smooth running. Participants or resource persons may not show up or be delayed, equipment may break down, transport may be unreliable, adverse weather conditions can affect fieldwork or visits, and so on. The important thing is to be as much prepared as possible and to think of suitable alternatives in good time rather than wait for things to go wrong. Take things in good stride and keep a positive attitude. A sense of humour is a very valuable asset.

- **Evaluation and assessment**. Learning from experience in order to improve future training activities will require evaluation and assessment. This is dealt with under topic 9 of this Toolkit – Evaluating and assessing training courses. This will involve both content and logistics aspects and thus must be discussed well in advance with those concerned and the course coordinators. Evaluation can take place on a daily or weekly basis and at the end of the course. Sometimes it can even be useful to evaluate individual sessions that take place during the event. Such detailed evaluation can address very specific issues that would otherwise get lost in more general evaluation tools. The course secretariat reproduces and distributes the evaluation tools and these are analyzed by the course coordinator(s) and included in a course report. Some sample evaluation tools used during courses organized by the Centre are included as examples in annexes 8 a to c and 9.

- **Course closing**. A formal course closing ceremony provides an opportunity to thank all those who have been involved in planning, organizing and implementing the event. At the same time, participants can be given a 'certificate of attendance' (see example in annex 10) and perhaps a copy of the group picture(s) taken during the course. In-service training is often not formal and certificates issued must take this into account since they are often used for career development purposes. In some cases, a course will be formally closed by a guest of honour representing the host country or institution. This person will need to be briefed about the activity so that (s)he can prepare some closing remarks.

After the course – following-up

A training event does not necessarily end on the last day of the course and the timely implementation of certain follow-up activities will continue to show concern about course participants and commitment to the event itself beyond the actual implementation phase. The following are some important follow-up activities.

- **Requests**. It is very likely that a training event will generate requests and activities that need follow-up after the course. This can be requests for additional materials, information, a contact, a response to an unanswered question, the organization of a discussion group, development of a website and so on. Make sure that such requests are addressed properly and timely to maintain a good relationship with the former course participants and again show your concern about them.

- **Reporting**. Even if this is not explicitly required by the donor funding the training event or the implementing institution, it is useful, even necessary, to document the training event in a brief narrative and financial report for future reference of all involved. A good course report will include acknowledgements of all who contributed in one way or another, some background information on how the event was initiated and its justification, a profile of participants and resource persons, an overview of the programme and the activities that took place, information on the learning materials used, a summary of the evaluation and annexes with useful information. In some cases, it will also be necessary to provide more detail on the content of the activity and this can be done in a more technical course report including topic abstracts or full length papers on the presentations, including discussion sessions. All participants and course resource persons should receive a copy of the course report shortly after the event took place.

- **Feedback**. Not all information obtained as the result of planning, organizing and implementing a training event can be included in a course report. Where needed, and at the discretion of the course organizers, feedback about specific performance can be provided to individuals so that they can improve their participation in future events. This should be done in a positive or constructive manner.

- **Impact assessment**. Training has often been seen as a quick fix to address a perceived need with little attention being paid to finding out whether this has really achieved its aims and objectives in terms of knowledge, skills and attitudes acquired as a result of attending the training. Even though time-consuming and complex, impact assessment is increasingly being considered and requested by those concerned with training to justify the human and logistic investment and cost. Impact assessment must consider both the individual and the employing institution. Topic 9 - Evaluating and assessing training courses in this Toolkit provides more background and ideas on this important subject. The World Agroforestry Centre is currently conducting some research on the impact assessment of its training activities. In addition to this, we use 'Personal Action Planning' and 'Small Grants Projects' (see annexes 11 and 12) as two approaches that give an idea of how course participants apply their newly gained knowledge, skills and attitudes in the context of their day-to-day work. Other approaches that have been used are specially designed impact assessment questionnaires that are sent to course alumni after a selected period of time (6, 9 or 12 months) (see annex 13).

Conclusion

The information presented under this topic may seem pretty obvious and logical but our experience has shown that course organizers sometimes neglect a number of these aspects or deal with them untimely. As a result, course participants and resource persons may feel frustrated or ill at ease and this will most certainly affect their interest and active participation at the expense of learning and training or teaching. Even though the activities, procedures and processes described here may at times sound cumbersome and demanding, consider the more important ones and adapt them to suit your own needs and requirements and make use of the various tools and forms contained in the annexes and in electronic format on the CD ROM included in this Toolkit.

Part III: Useful websites

Websites on agroforestry education and training

The internet and the world wide web offer an incredible amount of information and resources which are directly useful for teachers and trainers of agroforestry. Sometimes it can seem almost too much, however, and it is important when looking for information to be clear about what you are looking for at the beginning. Otherwise you may feel lost. If you have access to the internet, the following websites provide a good basis for information on general education, natural resource management education and agroforestry. Note: web addresses (URLs) tend to change frequently; if you find that the addresses below have changed, try typing the name of the institution, source or programme into one of the web search engines, and you may find the most recent address. Good luck!

Organizations and institutions supporting general/NRM education

Actionaid http://www.actionaid.org.uk/

Actionaid is a UK-based registered charity which supports a wide range of education and development initiatives throughout the world. They produce many development and education-related resources.

Centre for Environment Education (CEE) http://www.greenteacher.org/

CEE was established in August 1984 as a Centre of Excellence supported by the Ministry of Environment and Forests, Government of India, and affiliated to the Nehru Foundation for Development (NFD). The Centre inherits a rich multi-disciplinary resource base and the varied experience of NFD, its parent organization, which has been promoting educational efforts since 1966 in the areas of science, nature study, health, development and environment. CEE, a national institution with its headquarters in Ahmedabad, has a mandate to promote environmental awareness nationwide. CEE's primary objective is to improve public awareness and understanding of environmental issues with a view to promote the conservation and wise use of nature and natural resources. To this end, CEE not only creates expertise in the field of environmental education, but also develops innovative programmes and educational materials, testing them for validity and effectiveness. These programmes and materials are designed with flexibility to permit suitable adaptation for use across the country.

The Council for Agricultural Education
http://www.teamaged.org/PGS/index.html
The Council promotes and supports agricultural education. Instructional materials are available through the website.

C.P.R. Environmental Education Centre http://cpreec.org/
C.P.R. Environmental Education Centre is an Autonomous Centre of Excellence of the Ministry of Environment and Forests, Government of India, established jointly by the Ministry and the C.P. Ramaswami Aiyar Foundation. The Centre has been set up to increase consciousness and knowledge about the environment and the major environmental problems facing the country today. It has been conducting a variety of programmes to spread awareness and interest among the public, particularly among NGOs, women, youth and children, on all aspects of the environment and ecology, with the purpose of promoting conservation of nature and natural resources.

Food and Agriculture Organization of the United Nations (FAO)
Sustainable Development website, education page
http://www.fao.org/sd/KN2_en.htm
Education is a prerequisite to building a food-secure world, reducing poverty and conserving and enhancing natural resources. While FAO's Sustainable Development Department addresses all levels of education systems with a holistic approach, priority is given to basic education. The focus of its work is on:

- Expanding access to education and improving school attendance in rural areas
- Improving the quality of education
- Strengthening institutional capacity in planning and managing education for rural development.

FAO Forest Garden website: http://www.forestgarden.org/
FAO is developing a flexible model silvicultural system, which could be useful for teaching purposes.

Institute of Development Studies (IDS), UK. http://www.ids.ac.uk/
This site offers a wide range of web-based and published resources on development and development education which can be accessed through the main IDS website.

IDS Participation Group

http://www.ids.ac.uk/particip/

The participation group at IDS specializes in participatory approaches and methodologies, and hosts the Learning Participation network and dialogue.

http://www.ids.ac.uk/ids/particip/networks/learnparticip/

The website contains a useful synthesis of professional discussions on issues such as hierarchies and power relations in education, assessment and evaluation.

International Institute for Environment and Development (IIED)

http://www.iied.org/

Produces a very wide range of resources and information, including Participatory Learning and Action (PLA) notes.

The International Institute of Rural Reconstruction (IIRR)

http://www.iirr.org/

IIRR publishes many practical works emphasising participatory approaches to development and agroforestry.

ODI Forest Policy and Environment Group

http://www.odifpeg.org.uk/

The Overseas Development Institute has a key focus on development in general, and special interest in forestry and the environment. It produces information and resources on a range of forestry issues.

Oxfam

http://www.oxfam.org.uk/

Oxfam is a UK-based registered charity organization which supports a wide range of education and development initiatives throughout the world. The organization produces many development and education-related resources.

RECOFTC

http://www.recoftc.org/

The Regional Community Forestry Training Centre for Asia and the Pacific provides courses and support for a wide range of forestry-related projects and activities, and also publishes useful information.

United Nations Children's Fund (UNICEF)
http://www.unicef.org/

United Nations Educational, Scientific and Cultural Organization (UNESCO)http://www.unesco.org/

US Organization for Educating about Agriculture
http://www.ageducate.org/
This site presents a wide range of partners, resources and links on agricultural education in the US.

VSO (Voluntary Services Overseas)
http://www.vso.org.uk/
VSO is a UK-based registered charity organization which supports a wide range of education and development initiatives throughout the world. It produces many development and education-related resources.

World Bank
http://www1.worldbank.org/education/

Education research centres, statistics and data base

Argentina
http://www.indec.mecon.ar/

AskEric:Education Information with the personal touch
http://ericir.syr.edu/

Braintrack: the world's most complete education index
http://www.braintrack.com/

Centro de Investigación y Desarrollo de la Educación CIDE
http://www.cide.cl/

Data Base on Global Education
http://www.usaid.gov/educ_training/ged.html

Education Index
http://www.educationindex.com/

Education Virtual Library
http://www.csu.edu.au/education/library.html

European Community
http://europa.eu.int/en/comm/eurostat/servfr/home.htm

Eurydice: the information network on education in Europe
http://www.eurydice.org/

National Foundation for Educational Research (NFER)
http://www.nfer.ac.uk/index.htm

Red Latinoamericana de Información y Documentación en Educación
REDUChttp://www.reduc.cl/

U.S.A. - Education Statistics
http://nces.ed.gov/

Institutions and networks specializing in agroforestry and agroforestry education

Appropriate Technology Transfer for Rural Areas (ATTRA)
http://www.attra.org/attra-pub/perma.html - bookshelf
ATTRA has books and proceedings on agroforestry.

Australian Centre for International Agricultural Research (ACIAR)
http://www.aciar.gov.au/
The site offers various useful resources on agroforestry.

The Centre for Subtropical Agroforestry (CSTAF),
http://www.cstaf.ifas.ufl.edu/
CSTAF, is a multidisciplinary, multi-institutional centre at the University of Florida, undertaking research, extension, education and training related to agroforestry.

Education Concerns for Hunger Organization (ECHO)

http://www.echonet/org

ECHO has many online publications related to agroforestry.

Eldis Sustainable Forestry Resource Guide

http://www.eldis.ids.ac.uk/forests/index.htm

A valuable resource on forestry-related issues.

Permanent Agriculture Resources (PAR)

http://www.agroforestry.net/

PAR carries out agroforestry education and research in the Pacific region.

Southeast Asian Network for Agroforestry Education (SEANAFE)

http://www.worldagroforestrycentre.org/sea/Seanafe/Index.asp

SEANAFE provides resources for students, teachers and leaders in universities and colleges of agroforestry and integrated natural resource management. The aim is contribute to educational change and sustainable land management and livelihood through improved agroforestry practices. SEANAFE is a network of universities and technical colleges in Indonesia, Lao PDR, Philippines, Thailand and Vietnam. SEANAFE was founded in April 1999. In 2002, SEANAFE is establishing five national networks in a decentralized structure.

Tree pest management network: Guide to a Successful Agroforestry Demonstration Project

http://www.atpmn.org/html/afnote6.html

This site offers useful resources for those wishing to set up a demonstration project.

The World Agroforestry Centre

http://www.worldagroforestrycentre.org/

The World Agroforestry Centre has an excellent library and documentation centre on agroforestry and integrated natural resources management whose staff is very helpful in assisting people to get the necessary information and publications on related topics. The Centre's website offers information on its global and regional collaborative research and development activities and several of its publications can be downloaded. Part of the site deals with agroforestry training and education, including training materials. The site also provides useful links to many other

agroforestry sites around the world. This site will evolve into an 'agroforestry portal' that anybody with an interest in the subject can consult for information on the topic.

Initiatives supporting participatory environmental and development education (including teaching and learning approaches)

Action Magazine

http://www.action.co.zw/

Action is an environmental and health education project based in Harare, Zimbabwe. Through the format of a magazine, it researches, develops, and publishes education and training materials for children, teachers, and their communities. A high priority has been to develop locally relevant education materials with interesting, engaging activities that use available resources. In its efforts to make the magazine issues more accessible to the target group, Action carries out environmental education research, training of teachers on how to use the resources with pupils, and has back-up library and documentation services for teachers, researchers, community members and learners.

The Communication initiative

http://www.comminit.com/

This site provides communication resources, with development focus.

Eco-Schools

http://www.eco-schools.org/

Eco-Schools is a programme for environmental management and certification, and sustainable development education, for schools. Its holistic, participatory approach and combination of learning and action make it an ideal way for schools to embark on a meaningful path to improving the environments of schools and their local communities, and of influencing the lives of young people, school staff, families, local authorities, NGOs, etc. On this site, you will find out about the Eco-Schools programme generally, and links and contacts of national programmes. You can discover about some of the projects, and the partners and sponsors which help make it happen. There are news and newsletters, and a special area for schools, with ideas, projects, art and other submissions sent in by Eco-Schools.

Education for Sustainable Development Toolkit

http://www.esdtoolkit.org/

The Education for Sustainable Development Toolkit will help schools and communities develop a process for creating locally relevant and culturally appropriate education. This Toolkit is based on the idea that communities and educational systems need to dovetail their sustainability efforts. Ideally, local educational systems can reorient existing curricula to reinforce local sustainability goals.

Future Forests

http://www.fao.org/FORESTRY/fon/fonp/cfu/pub/earthbird/eb_00_e.stm

Future Forests is a package of environmental education materials that help young people learn the skills needed to work together so as to use their forests sustainably. Future Forests has been produced in English, French, Spanish, Arabic and Chinese and includes a 24-page colour cartoon magazine, a teacher's guide, a classroom poster and a supplement for using Future Forests to teach English. Future Forests' message is that we are all dependent on our forests and need to work together to ensure that there are forests in the future. The magazine teaches young people how to identify and analyse environmental problems in their community through learning by doing and then involve their neighbours, schools and government agencies in solving the problems. The Future Forests environmental education materials are being developed and implemented with the participation of partner organizations all over the world.

Helvetas Social Forestry Support Programme

http://www.socialforestry.org.vn/

Provides information on social forestry education programmes, approaches and technologies, including agroforesty.

Knowledge centre for small-scale sustainable agriculture

http://www.tool.nl/~agromisa/

Media for Development

http://www.devmedia.org/

This site offers various media and materials related to development issues.

SADC Regional Environmental Education Programme

http://www.sadc-reep.org.za/

The purpose of the Regional Environmental Education (EE) Programme is to enable environmental education practitioners in the SADC region to strengthen environmental education processes for equitable and sustainable environmental management choices. This will be achieved through enhanced and strengthened environmental education policy, networking, resource materials and training capacity.

The SADC Regional EE Programme consists of four major components: policy, networking, resources and training.

Teaching and Learning for a Sustainable Future

http://www.unesco.org/education/tlsf/

Teaching and Learning for a Sustainable Future is a multimedia teacher education programme published by UNESCO. It contains 100 hours (divided into 25 modules) of professional development for use in pre-service teacher courses as well as the in-service education of teachers, curriculum developers, education policy makers, and authors of educational materials. Teaching and Learning for a Sustainable Future is rooted in a new vision of education that helps students better understand the world in which they live, addressing the complexity and interconnectedness of problems such as poverty, wasteful consumption, environmental degradation, population, health, conflict and human rights that threaten our future. Teaching and Learning for a Sustainable Future will enable teachers to plan learning experiences that empower their students to develop and evaluate alternative visions of a sustainable future and to work creatively with others to help bring their visions of a better world into effect. It will also enhance the computer literacy of teachers and build their skills in using multimedia-based resources and strategies in their teaching.

Other useful links

SEANAFE, a World Agroforestry Centre Network, has prepared a series of weblinks which includes additional sites not listed above. They may also be useful for agroforestry training purposes. Of course, you will also find many more links as you visit each website.

General Agroforestry

Agroforestry net, Hawaii: http://www.agroforestry.net/

Alternatives to Slash-And-Burn: http://www.asb.cgiar.org/

Forest, Farm and Community Tree Network:
http://www.winrock.org/forestry/factnet

ICRAF SE Asia website: http://www.cgiar.org/icraf/sea

National Agroforestry Centre: http://www.unl.edu/nac

People and Plants Handbook: http://www.kew.org.uk/peopleplants

Sustainable Agriculture and Natural Resource Management, Collaborative Research Support Program (SANREM): http://www.aae.wisc.edu/sanrem-sea/

WaNulCAS, a model for Water, Nutrients and Light Competition in Agroforestry Systems: http://www.icraf.cgiar.org/sea/agroModels/WaNulCAS/index.htm

International organizations

CAB International: http://www.cabi.org/

Centre for International Forestry Research: http://www.cifor.cgiar.org/

Future Harvest: http://www.futureharvest.or/

Institute of Scientific Information: http://www.isinet.com/isi/

International Development Research Centre of Canada (IDRC):
http://www.idrc.ca/books

Mekong Info: http://www.mekonginfo.org/

New Agriculturist: http://www.new-agri.co.uk/

US Department of Agriculture: http://www.nal.usda.gov/

World Conservation Union (IUFRO): http://iufro.boku.ac.at/

Sources of literature

World Resources Institute: http://www.wri.org/

FAO interactive literature catalogue: http://www.fao.org/icatalog/inter-e.htm

Conservation Ecology. A peer-reviewed journal of integrative sciences and policy research: http://www.consecol.org/Journal/

Journal of Agricultural Education:http://www.pubs.aged.tamu.edu/jae/

The Journal of Agricultural Education and Extension - international journal on changes in agricultural knowledge and action systems:
http://www.bib.wau.nl/ejae/

The Overstory: http://www.agroforester.com/overstory.osprev.html

TROPAG & RURAL: http://www.kit.nl/

Current Contents (Agriculture, Biology and Environmental Sciences): CD-ROM and online by subscription.

AGRICOLA: http://www.nal.usda.gov/ag98

eCAB (CD-ROM and online by subscription): http://www.search.cgnet.com/

TREECD (CD-ROM by subscription): http://www.search.cgnet.com/

Agroforestry Abstracts (Online by subscription: http:\www.cabsubsets.org

African Electronic Journals (AJOL): http://www.oneworld.org/inasp/ajol