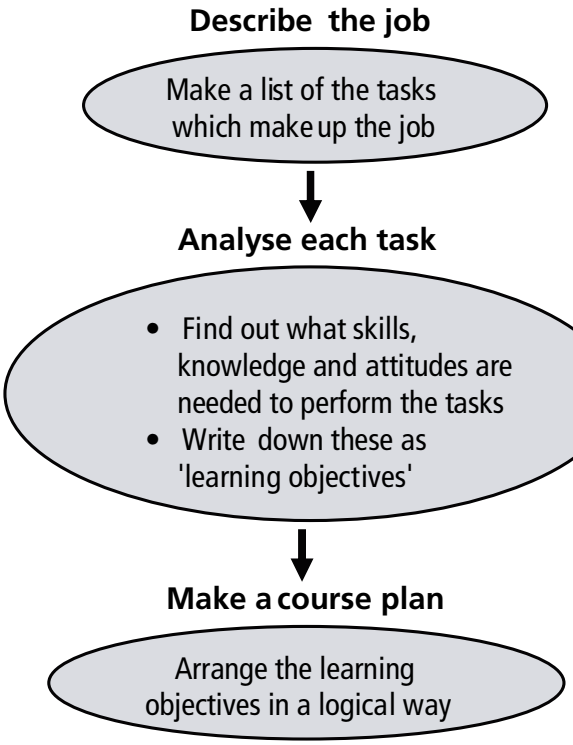
SECTION THREE

Developing a Course Curriculum

Questions facing a teacher of eye care workers are: *'What do I need to teach? How do I decide what the students need to learn? How do I decide what to include in a course, and what do I leave out?'* Fortunately, there is a clear path that we can follow (Abbatt and McMahon, 1993) which is shown below.



Describing the job

In health care, the reason for training is clear – we expect those who are being trained to do their jobs well. This means two things. Firstly, we have to be quite clear about who is going to be trained to do the job we need, what class or rank of worker, from which area, with which background. Then we have to define exactly what the job is that we want the learners to perform. If we think carefully about it, we will see that a job is made up of tasks. We therefore have to start by listing the tasks that our health worker should be able to perform competently. How do we arrive at this list of tasks? Here are some ideas:

- We watch skilled health workers at work and write down what they do every day
- We ask the health workers themselves to tell us which tasks they perform in their daily work. We ask other health team members (e.g. managers) the same thing
- We consult official documents, such as job descriptions for that category of worker
- We look at available health statistics and, from that, we work out what the health worker should be able to do

Some tasks on the list will be more important than others. This may be because they are done more frequently, or because there will be serious consequences if they are badly done.

It is important to think widely at this stage. Some people think that the only task that health workers have is to treat sick people. However, they have many other important tasks as well. Here are some of them:

- Management tasks – e.g. planning a community eye care programme, maintaining the drug supply, keeping financial records, managing time properly
- Tasks related to preventing disease and promoting health – e.g. health education
- Tasks related to teamwork – e.g. resolving conflicts
- Tasks related to communication – e.g. writing a referral letter

Such tasks must also be included in the task list.

In an earlier section we spoke about 'educating' students rather than just 'training' them. If we want students to be able to solve problems by themselves, it should be listed as a 'task' in the overall 'job'. In this way we can make sure they learn to do so, by 'educating' them.

Analysing the tasks

What do we need to teach a person, to perform a task competently? According to Abbatt and McMahon, people need to be taught both *skills* and *enabling factors* (i.e. factors which a person needs to perform the skill properly). Let's take the following as an example:

Teaching eye care workers to manage trachoma

Skills needed for the task	Enabling factors
Diagnosing a case of trachoma	• Knowledge of symptoms, signs, stages
Applying eye ointment	• Knowledge of the organism, stages, treatment
Performing tarsal rotation	• Knowledge of the anatomy of the eyelid, surgical equipment/materials to use
Educating people and communities to prevent trachoma	• Knowledge of the spread of the disease and methods of preventing such spread • An attitude of concern and caring

We see here that there are three kinds of *skill*, and two kinds of *enabling factor*:

Skills	1. Manual skills 2. Communication skills 3. Decision making skills	} Educationalists call these five categories the *domains of learning*.
Enabling factors	4. Knowledge 5. Attitudes	

This means that we have to look at each task, and work out the knowledge, attitudes and skills that the worker needs to learn to perform that task properly. Here is an example, for an ophthalmic assistant:

Task: Diagnosing and managing a patient with chronic open angle glaucoma (COAG)	
Manual skill	• Measuring intraocular pressure using a Schiötz tonometer • Performing fundoscopy with an ophthalmoscope • Measuring visual fields
Communication skill	• Explaining to a patient how to take treatment • Explaining the need to continue with treatment
Decision making skill	• Deciding when to treat • Deciding how to treat • Deciding when to refer
Knowledge	• Anatomy of the eye • Physiology of the aqueous humour • Pathophysiology/course of the disease (treated/untreated) • Epidemiology of the disease • Drugs used (mode of action, dosage, side-effects) • Problems experienced with treatment
Attitude	• Encouraging and supportive.

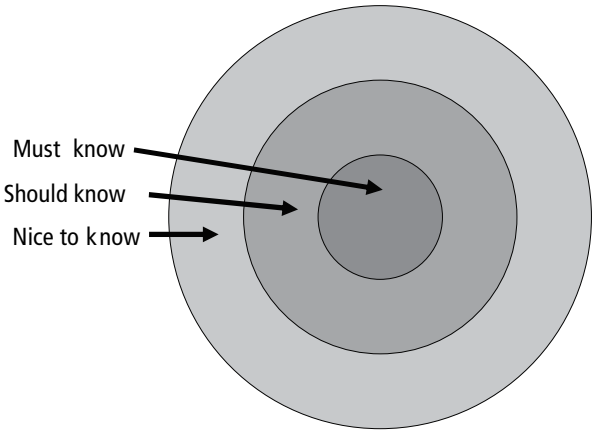
After this analysis we know exactly what the students have to learn. In fact, the items in the right hand column become our 'learning objectives'. We simply rewrite them as follows:

At the end of the course the students should be able to:

- Measure intra-ocular pressure using a Schiötz tonometer
- Explain to a patient how to take treatment for COAG
- Decide when to treat a person with COAG
- Describe the anatomy of the eye
- Demonstrate an encouraging and supportive attitude towards patients with COAG.

Note the following:

- Each learning objective starts with an *action verb*. For the 'skills' and 'attitude' objectives this is easy, but for the 'knowledge' objectives we have to use words like 'describe', 'list' and 'discuss'
- When you have analysed a couple of tasks you will notice that some tasks share the same 'learning objectives'. This is especially true for the communication skills and the attitudes, but also for basic subjects like anatomy and physiology
- Teachers tend to expect students to learn too much knowledge – more than they need to do the job. It is useful to keep the 'target concept' in mind: never teach or assess material that is just 'nice to know'



Making a course plan

When you have finished analysing all the tasks, you will have a large number of learning objectives. These now have to be fitted into a timetable. As you do this, you have to keep the following in mind:

- The material must be presented in a logical sequence. This means two things:

Firstly, we need to group things together that belong together. For example, we group everything around trachoma together: the causative organism, epidemiology, prevention, treatment etc.

Secondly, some things have to come before others. For example, students need to learn basic optics before they learn to do refraction.

- You have to accommodate the time available for the course. Somehow there is always too little time – which means that you have to prioritise. Some learning objectives have to be left out, or made shorter. You also have to avoid unnecessary duplication and repetition.
- You have to consider the teaching methods you are going to use. For example, practical sessions take more time and need more teaching staff.
- You have to consider the facilities that are available for training. If your own institution cannot offer enough places for practical sessions, students may have to travel to other sites.

Problem-based learning (PBL)

In traditional training courses the teachers work out what the students need to learn, and systematically make sure that they learn it. PBL is different. As its name says, this method bases all learning on problems. There are no lectures, instead, the students are presented with a problem – usually a clinical one. Working in small groups and under the guidance of a tutor, the students themselves work out what they need to know, and what skills they need, to manage this problem. They then go to the library, the wards and clinics, to learn the necessary knowledge and skills.

For example, one problem may be that of a patient with entropion and corneal scarring. The students work out that they need to learn about the anatomy of the conjunctiva, cornea and eyelid, the clinical course of trachoma, the causative organism, its treatment (medical and surgical), its prevention (improved water supply and sanitation, community participation, etc., its epidemiology, other causes of corneal scarring, etc). This one problem therefore makes the students learn a large number of topics and skills.

The teachers still have to work out the content of the curriculum. But by carefully selecting the right problems, and enough of them, they make sure that students will cover everything they need to learn. The difference is that the students themselves 'discover' what they need to learn, rather than being given all the information by their teachers.

PBL has several advantages above traditional courses:

- Learners learn how to solve a problem by themselves, in a systematic way. This means that they can do it again in future, when they are faced with a new problem
- The learners only learn what is needed to solve the problem. There is less danger of learning a lot of unnecessary information
- They learn the different disciplines in an integrated way – this makes it easier to remember and to understand new information
- Learners learn deeply rather than superficially because they are actively involved – and they can see the need for what they are learning

Curriculum reform and the 'SPICES' model

Curricula are always changing, as teachers try to remain up-to-date and to eliminate problems in their teaching. Over the last 20 years there have been strong movements in many countries, to improve the quality of training of health workers. Harden *et al.* (1984) describe these changes as follows:

- **S**tudent centred
  The most important consideration is that students should learn excellently. Teacher convenience and status comes second
- **P**roblem based
  Students learn to solve problems (clinical and management) rather than just memorising facts
- **I**ntegrated
  We try to teach many subjects together – all those parts which deal with a specific problem. We try to move away form teaching separate 'subjects'
- **C**ommunity based
  Students learn new knowledge and skills in community settings – not just in large hospitals as in the past
- **E**lectives
  The curriculum is not completely fixed – students get some opportunities to pursue their individual interests
- **S**ystematic

We make sure that students learn to manage all important problems by planning their learning carefully. We no longer just put them into the ward (or clinic) and hope for the best

You will notice that the first letters of the six words spell 'SPICES'. This is a helpful checklist to evaluate our present curricula and to see where we may have to change.