Effective Teaching and Learning for Eye Health Workers

Adapted from a series in the
Community Eye Health Journal

Detlef Prozesky, Sue Stevens & John Hubley

VISION 2020 THE RIGHT TO SIGHT

INTERNATIONAL CENTRE FOR EYE HEALTH

Effective Teaching and Learning for Eye Health Workers

Adapted from a series in the
Community Eye Health Journal

Detlef Prozesky, Sue Stevens & John Hubley

VISION 2020 THE RIGHT TO SIGHT

INTERNATIONAL CENTRE FOR EYE HEALTH

Effective Teaching and Learning for Eye Health Workers

Detlef Prozesky *BSc MBChB MCommH PhD*

Director, Centre for Health Science Education
Faculty of Health Sciences
University of the Witwatersrand
7 York Road
Parktown
Johannesburg, 2193
South Africa

Health Education and Promotion Module Convenor,
International Centre for Eye Health, London, International Centre for the Advancement of Rural Eye Care, India and Pakistan Institute of Community Ophthalmology

Sue Stevens *RGN RM OND FETC ENB 998*

Ophthalmic Resource Coordinator and Nurse Advisor
International Centre for Eye Health
London School of Hygiene and Tropical Medicine
Keppel Street
London, WC1E 7HT
United Kingdom

John Hubley *BSc PhD*

Principal Lecturer in Health Promotion
School of Health and Community Care
Leeds Metropolitan University
Calverley Street
Leeds, LS1 3HE
United Kingdom

Published by
International Centre For Eye Health

With the support of
Christian Blind Mission International, Dark & Light Blind Care, Conrad N Hilton Foundation, Stanley Thomas Johnson Foundation, Sightsavers International, Tijssen Foundation, ORBIS

ACKNOWLEDGEMENTS

We have drawn heavily on the book *'Teaching Health Care Workers',* authors Fred Abbatt and Rosemary McMahon. We gratefully acknowledge them as the source of an excellent overall system and many inspirational insights.

Dr Daksha Patel, Courses Convenor, International Centre for Eye Health, kindly reviewed this booklet.

Ann Naughton was responsible for much of the original coordination for this collection.

ISBN: 1-902541-17-0

Published and distributed by
International Centre for Eye Health
London School of Hygiene and Tropical Medicine
Keppel Street
London WC1E 7HT, UK

Tel. +00 44 20 7958 8168
Fax. +00 44 20 7958 8317
E-mail: Sue.Stevens@Lshtm.ac.uk
Web: www.jceh.co.uk ***(Community Eye Health Journal)***
Web: www.iceh.org.uk

Front Cover Photograph - Sue Stevens

Designed by Regent Typesetting, UK.

Printed by The Heyford Press Ltd, UK.

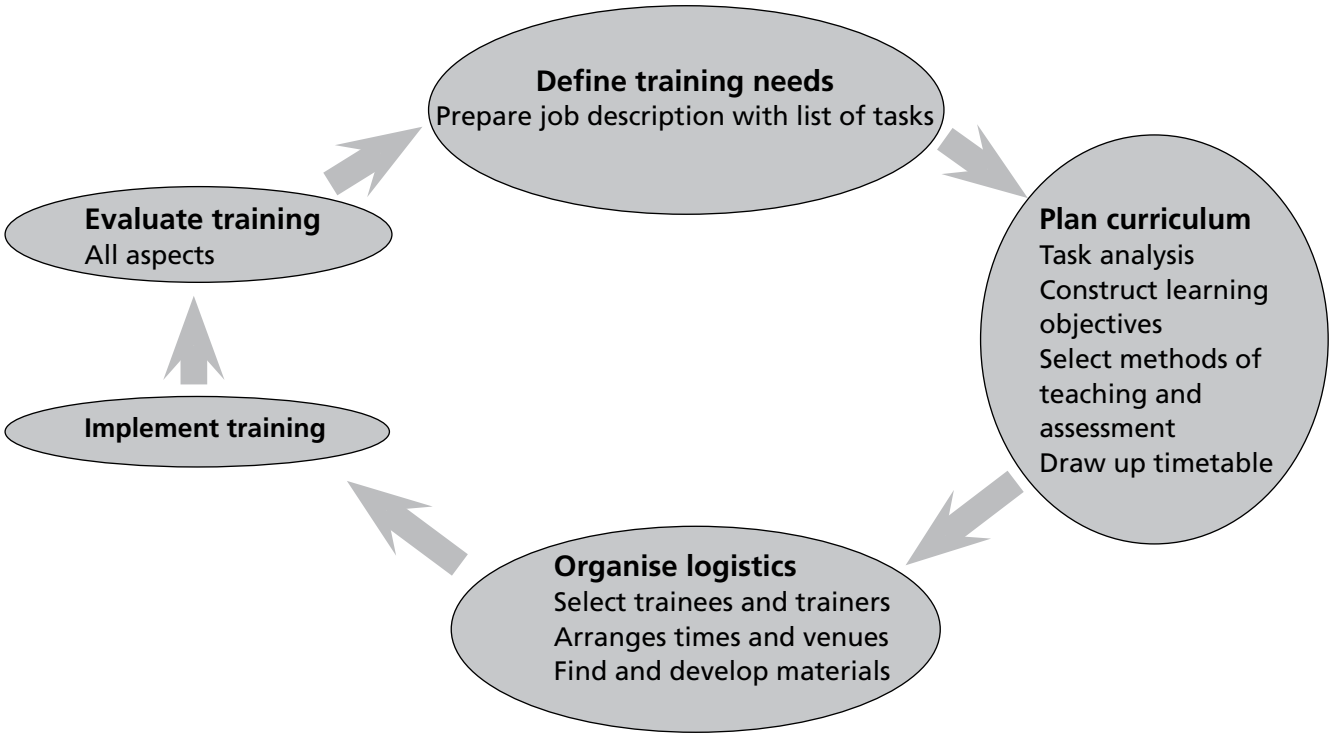
Contents

Introduction

Human resource development is one of the three pillars of 'VISION 2020 – The Right to Sight'. Many people involved in community eye health are also teachers – and some have never had any training on how to teach effectively. For these reasons, the *Community Eye Health Journal* published a series of articles on teaching and learning. A number of readers have asked for additional copies of the articles and this booklet, providing updated and additional material, is the result. As was the case with the original series, it aims to stimulate readers to become more effective teachers. It touches on a number of important topics related to teaching and learning in (we hope) a systematic and practical way. However, this can only be a beginning as education is a very broad field and readers are referred to the material in the reference section for further information.

Our understanding of what must be done to prevent blindness and promote eye health has advanced considerably in recent years. The challenge ahead is to introduce these methods to the field as quickly as possible. Training is an essential activity in the spread of new knowledge and skills to eye health workers. It can take place in a variety of ways, through initial training of field workers or as part of the continuing education of existing field staff. Training can also involve attendance at short sessions, longer training through intensive workshops, on-the-job supervised practice or distance learning through newsletters, manuals, recorded cassettes and websites.

To provide an introduction to planning, developing and implementation of effective training, the diagram below provides a summarised approach.



SECTION ONE

Teaching and Learning

This section sets the scene by examining some important concepts related to 'teaching', 'learning' and 'education'.

The words we use to talk about teaching and learning

People use different words when talking about teaching and learning. Sometimes the same word will mean different things to different people, and sometimes different words will carry the same meaning. For example, Americans tend to use the word 'evaluate' to describe testing students to see if they have learnt, while the British often use the word 'assess'. Here are some other examples of words with related meanings:

- educator, teacher, trainer, tutor, lecturer, facilitator
- student, pupil, learner, scholar

What do these words mean to you? There will never be full agreement about the 'real' meaning of each of them. If people appear to misunderstand us, we have to explain what we intend them to mean.

About 'learning'

All of us understand things in the light of our past experience. This is also true of 'learning' – we get our ideas of what 'learning' means from what happened to us in the past. So, for example, we may think of 'learning' as something which takes place in a school or college, in a classroom. We may think of it as a person sitting alone at night, trying to memorise a lot of facts so that s/he can pass an examination. However, a bit of reflection will show us that 'learning' is much wider than that. After all, children learn a great deal before they even get to school – they learn to speak, to walk. Educational psychologists tell us that any activity which leads to a change in our behaviour is 'learning' (Stones, 1966, pp.50–51).

Here are some more ideas about 'learning':

- Learning can be *formal* or *informal*. We learn informally from what we experience day by day – things which happen to us make us change the way we think and act. We may not even be aware that we are learning, which may cause problems – for example, health workers may learn bad attitudes from the example of others. Of course, learning may also be formal – we attend a course which is planned in a structured way, in a school or college.
- We don't just learn *knowledge and facts* – we also learn *skills and attitudes*. This is especially important for health workers, since it is in our practical work that we have an effect on the health of the people we serve. A skill that is often overlooked is the ability to make decisions well, and this has to be learnt systematically. Note that we learn knowledge, skills and attitudes in different ways – for example, we may learn a new idea from a discussion, but we learn skills by practising them and getting feedback.
- *People learn in different ways*. Researchers have identified different 'learning styles' (Harris and Bell, 1986, pp.118-126). Some people are 'receivers' – they like to memorise what is given to them. This is a very common style. It is reinforced by teachers who expect students to memorise, and reward them for it. Other people are 'detectives', they like to investigate what they are learning themselves to get to understand it. Yet others are 'generators', they like to decide themselves what they want to learn, and then look for opportunities to learn those things.
- Learning can be *superficial* or *deep* (Pedler, 1974). If knowledge is only memorised (superficial learning) it is soon forgotten and may never affect the way that person does her/his work. If the learner is made to use the new knowledge actively, the learning becomes *deep*. The learner connects the new knowledge to the concepts that s/he already has and understands how it can be used practically. It is therefore much more likely to be remembered and used.
- *Motivation is important for learning* (Handy, 1976, pp.31– 47). What is it that makes people want to learn? Some learn because they want to do a better job – they get satisfaction from the feeling that they are competent. People are also very strongly motivated by the hope that they will be rewarded – for instance,

by gaining a qualification, leading to a promotion and better pay. The need to pass exams is therefore a very strong motivator.

- Learning continues *throughout a person's lifetime* – at least informally. We all know that health workers should continue to learn throughout their careers because new information about health is constantly becoming available. However, many workers do not have access to formal in-service training. This means they have to take personal responsibility for staying up-to-date and they have to become 'life-long learners'.

About 'teaching'

Our understanding of what 'teaching' is, is based on our past experience. Our earliest experience was in school, where the teacher was also a 'master' or 'mistress', standing in front of the class, telling us what to do and what to learn. Some of us experienced the same kind of 'teaching' at college. Others may have experienced teaching where the 'teacher' is more of an equal, who takes account of our experience and even learns from us. That is why Abbatt and McMahon (1993, pp.15–21) say: *'teaching is helping other people to learn.'* They go on to say that the job of 'teaching' health care workers has four elements:

- The teacher has to *decide what students should learn*. The students and their potential employers may take part in this decision, but all are guided by the same principle: **it is the job that people have to do, that determines what they should learn**. They have to learn all the knowledge, skills and attitudes needed to perform a specific job.
- The teacher has to *help the learners to learn*. This does *not* mean that the teacher 'spoon feeds' the students, as if they were babies. It *does* mean that the teacher's first concern should be that the students should learn as well as possible. Teaching sessions or classes have to be planned carefully, taking into account the learning styles, the language, the background of the students. In short, the teachers must be **student centred, not teacher centred**. Teachers are not dictators and students are not servants.
- The teacher has to *make sure that the students have learnt* – he/she has to assess them. Assessment helps teachers and students to see how well the students are progressing, so that they can attend to any weaknesses. It sets a standard, so that society is given people who are competent to practice. **We must plan assessment carefully so that it supports the learning we want to see** – we know that students learn what they believe they need to pass the exams, and leave out the rest.
- The teacher has to *look after the welfare of her/his students*. Students who are stressed and unhappy do not learn well. Good teachers try to ensure that the general living conditions of their students are adequate. They also provide opportunities for personal counselling for them. **Teachers need to cultivate an open and trusting relationship with their students**.

About 'education'

We know that scientists are able to teach rats and even worms to perform certain actions, by rewarding them if they choose the 'right' action and punishing them if they choose the 'wrong' one! Is that what teaching is all about? We feel instinctively that teaching is much more than this. We would like our students to grow intellectually, to widen their horizons, to start reasoning independently. Many people like to use the word 'educate' for this process. Here is what two very different people have said:

- The great Socrates said that a good teacher should be like a gadfly (or black fly, well known to eye care workers!) which is an irritating and disturbing insect. The teacher asks difficult and important questions, and expects students to work out the answers themselves. This takes place in the form of a dialogue (not a lecture).
- The 20th century Brazilian educationalist Paulo Freire says the same thing in another way – teachers can be 'bankers' or 'problem posers'. The 'bankers' see their students as empty vessels, to be filled with the teacher's knowledge and ideas (as one puts money into a bank). The 'problem posers' understand that their students already have knowledge and experience, and stimulate them to use those resources by giving them problems to solve.

This is clearly very important for people planning and delivering eye care services. They have to learn knowledge and skills, true enough, but then they have to be able to apply them in a variety of different circumstances. They constantly have to solve problems, to make decisions – and they have to learn to do this well.

SECTION TWO

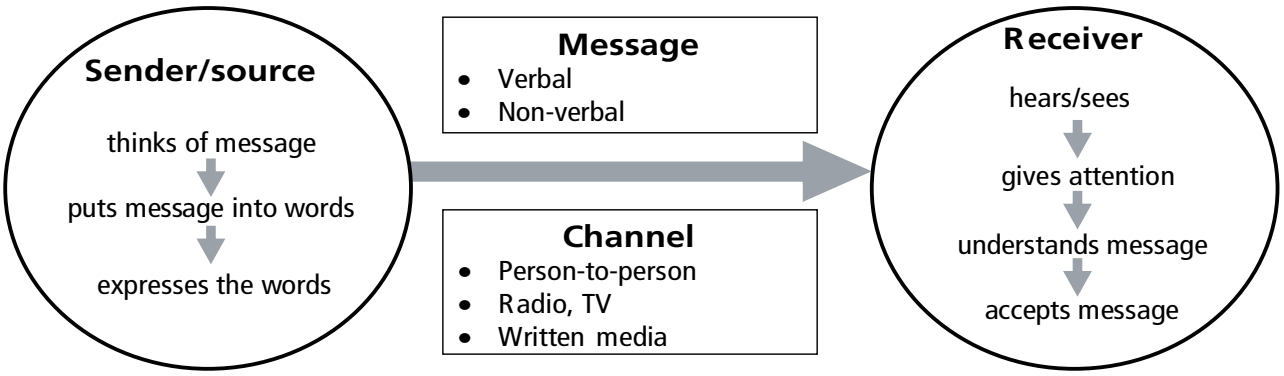
Communication

In this section, we take a short look at the important role of communication in teaching. It also offers some ideas about improving this communication, leading to better teaching practice.

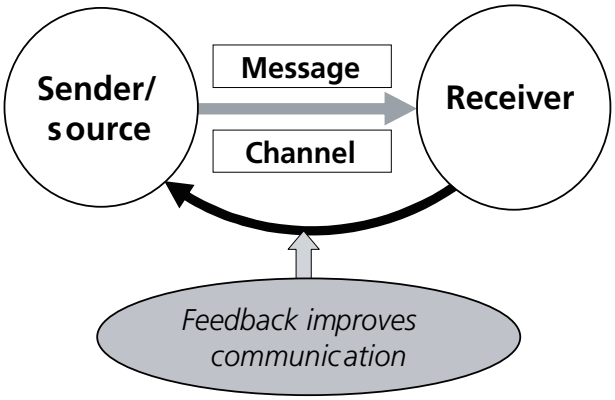
About 'communication'

What is 'communication'? According to the Concise Oxford Dictionary the word means 'the act of imparting, especially news', or 'the science and practice of transmitting information'. These definitions clearly show the link between 'teaching' and 'communication': teachers are constantly imparting new knowledge, or transmitting information.

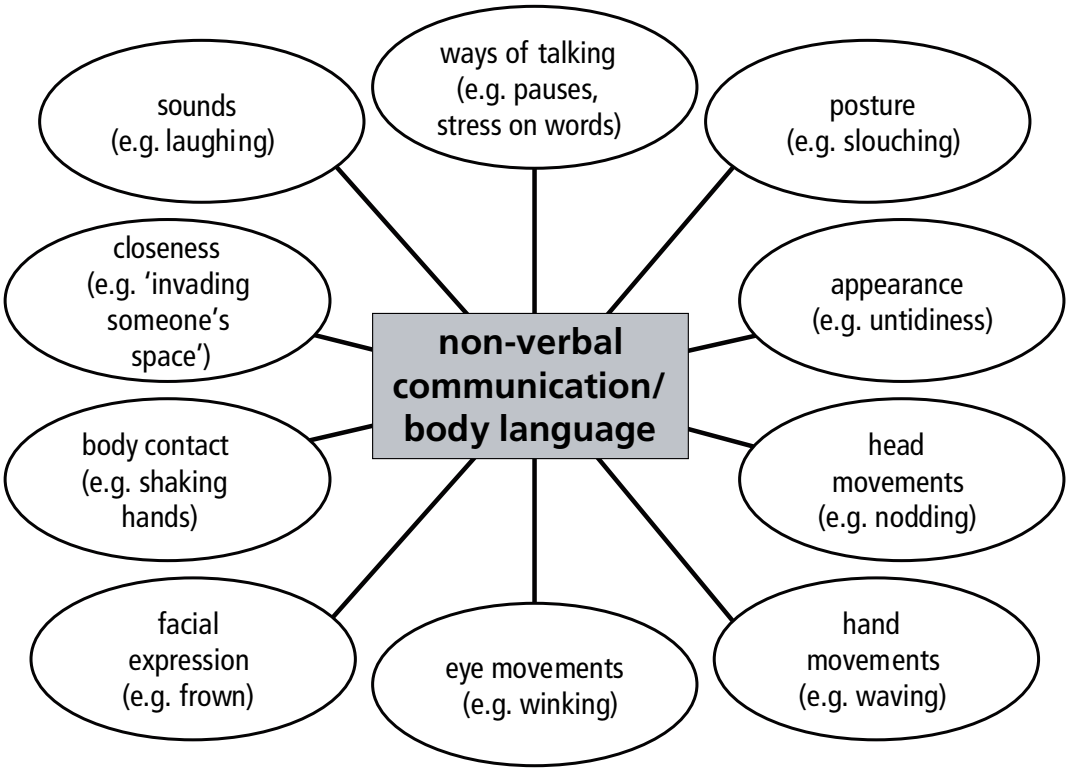
Hubley (1993, pp.47–51) shows us that communication is *a complex process*:



At any stage of this process things may go wrong, making the communication less effective. For instance, the sender may not express what he/she wants to say clearly, or the room may be noisy, or the receiver may not understand the words the sender is using. To be effective, teachers have to try to minimise these *barriers to communication*. We do this in a number of ways – for example, by making sure that the room is quiet and well lit, by speaking slowly and clearly; by only using words which the students should be able to understand. However, the most important way to overcome the barriers is *two-way communication*. This means getting regular feedback from the receivers (the students in this case). Are they really understanding what we are trying to put across?



Communication does not only take place by means of words. *Non-verbal communication* (or *body language*) is equally important. We are all familiar with the different kinds of non-verbal communication:
This kind of communication is usually subconscious – we use it without thinking about it. This is why we say that 'it is difficult to lie in body language'. If teachers really attend to the body language of their students they will know when they are bored or confused. From the body language of their teachers, students pick up whether the teachers are confident and enthusiastic and encouraging.



Person-to-person communication: presentation skills

In the previous section, we discussed different styles of teaching. Some teachers like to talk, and expect the students to write down what they say and to learn it (this style encourages superficial learning – and rapid forgetting!) Other teachers see their role as one of helping the students to learn at a deeper level – to understand new ideas and concepts so well that they can apply them in a work situation. Either way, these teachers will do a better job if they communicate well with their students.

An important element of communication in teaching is the use of teaching aids. We have all heard the saying: 'What I hear, I forget; what I see, I remember; what I do, I know.' Pictures, written posters and practical demonstrations improve communication and we should use them as much as possible. Most of us have access to paper, posters, a chalkboard, or an overhead projector (some also have access to data projectors). We can use these to prepare aids for our lessons: summaries of important facts, pictures and diagrams, even models. The overhead and data projectors are particularly useful, because they allow us to face our students while using them.

How can I know whether I am communicating well as a teacher? Communication is a skill – and we improve our skills by getting feedback on the way we perform them. We can get such feedback by asking an experienced colleague to sit in on our teaching and to give us feedback. We can also ask someone to record us on a videotape as we teach, which we then inspect critically afterwards. In either case, the feedback will be better if we use a checklist to judge our performance. Here is such a checklist:

Checklist for communication during teaching

About the style of presentation

- *Does the teacher speak clearly?*
  (loud enough; not too fast; faces the class; avoids mannerisms like 'um')
- *Is the teacher's non-verbal communication suitable?*
  (appropriate gestures and expressions; moves around; eye contact with whole class)
- *Does the teacher speak understandably?*
  (uses words that the students should be able to understand)
- *Is the speed of presentation right?*
  (the students must be able to absorb the material that is presented)
- *Is there two-way communication?*
  (the teacher checks regularly if the students have understood)
- *Does the teacher aim for 'deep learning'?*
  (the teacher gives the students problems to solve; they participate and discuss)
- *Is there evidence of a good relationship between teacher and students?*
  (teacher and students respect each other, listen to each other)

About the content

- *Does the teacher emphasise important knowledge?*
  (the main messages are clear and emphasised; unnecessary detail is left out)
- *Is information presented in a logical sequence?*
  (bits of information follow logically on each other; easy to understand and to remember)

About the place where the teaching is happening

- *Is the place suitable for good communication?*
  (enough light; no noise from outside)
- *Are the students comfortable?*
  (adequate seating; students can see the teacher; not too hot nor too cold)

About the use of teaching aids

- *Are the teaching aids relevant?*
  (the aids only deal with the subject matter of the lesson, and clarify it)
- *Are the teaching aids well prepared?*
  (only contain highlights/main points; neat; different colours are used)
- *Are the teaching aids easy to read and understand?*
  (letters and pictures are large enough; not too much information on one aid)
- *Are the teaching aids skilfully used?*
  (the teacher handles them with confidence; uses a pointer; does not mix them up)

Written communication: handouts

Teachers communicate by speaking, but also by writing. Students do most of their learning from written material such as books and notes. In many of our countries, student eye health care workers have to learn from documents in a language (often English or French) which is not their first language. We now know from research that almost all such students have problems with reading these 'second languages': they read more slowly, and understand less, than students whose first language is English or French. This is purely a language issue, and has nothing to do with intelligence.

This fact is very important for teachers to remember when they select or prepare written materials for their students. Photocopies of journal articles or pages out of a textbook are often complex and hard to read – be careful of using them. This is one reason why many teachers prepare *handouts* for their students, which they write themselves. It may be a summary of important points to be learnt; or a guide to students on work they have to do, or references they have to look up. Teachers may use handouts for students to refer to during a lesson, and students will definitely use them in their self-study time. Handouts are an important way of communicating with students and they must communicate effectively. Here is a checklist which should help you to write better handouts:

Checklist for writing good handouts

About the content

- *Does it emphasize important knowledge?*
  (makes clear what is important – the students won't know)
- *Does it present information in a logical sequence?*
  (information logically connected, so it is easy to understand and to learn)
- *Is it scientifically accurate and up-to-date?*
  (information is true, comprehensive, in line with current thinking)

About the style of writing

- *Are the sentences short?*
  (not more than 20 words; one idea per sentence)
- *Are active verbs used as much as possible? ***
  ('feed children regularly', not 'children should be regularly fed')
- *Are the readers likely to understand the words?*
  (no jargon; using the simplest word that will say what you want to say)

About the layout/ presentation

- *Is it legible/easy to read?*
  (handwriting neat; cyclostyled copies or photocopies clear and not blurred)
- *Is it well spaced and not too full?*
  (a page too full with print is discouraging, boring, difficult to read)
- *Is it striking and interesting?*
  (different letter sizes; bold font used for emphasis; pictures or diagrams included)

*** this is true for English – in other languages the passive voice may be clear/ acceptable*

These days many teaching institutions have websites where teachers put their handouts for the students to find. It doesn't matter whether the handout is on paper or on a website – it still needs to be well written. For those who are interested, there are simple 'readability tests' (such as the Cloze and Gobbledygook tests) that you can use to see if your material is written at the right level for your students.

The Cloze 'readability test'

You take a sample of the material that you want to test – usually half a page. You then remove every fifth word, leaving a blank space (you can do this with correction fluid on a paper copy or by substituting a gap for the word on an electronic copy). You then give the sample to a few persons from the target group (the group which is going to use the material). You ask them to try to fill in the gaps. When they have finished you work out what percentage of replacements is correct, in each case. Then you calculate the average percentage of correct replacements, of all who took the test. This is interpreted as follows:

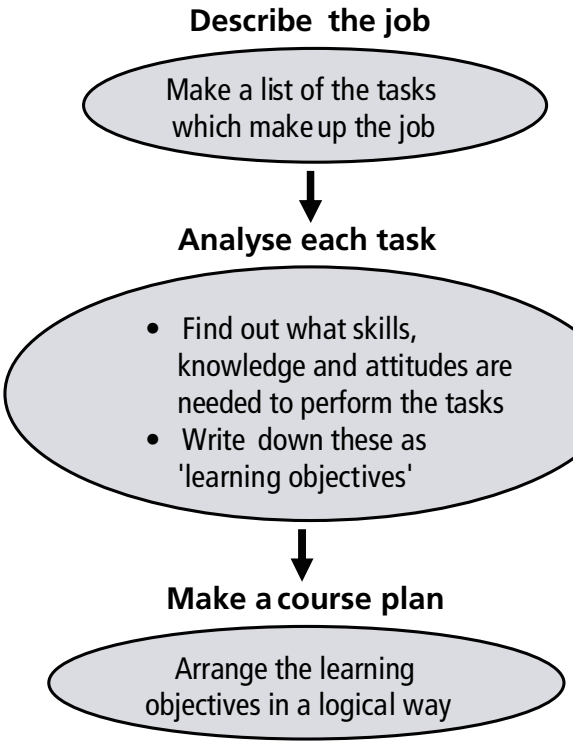
- 60–100% of missing words correctly guessed: the material is suitable.
- 40–59% correctly guessed: the material needs revision so that it is more understandable.
- 0–39% correctly guessed: the material is too complex and must be completely re-written.

The good thing about the Cloze test is that the people who are going to use the material, test that material for you.

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.

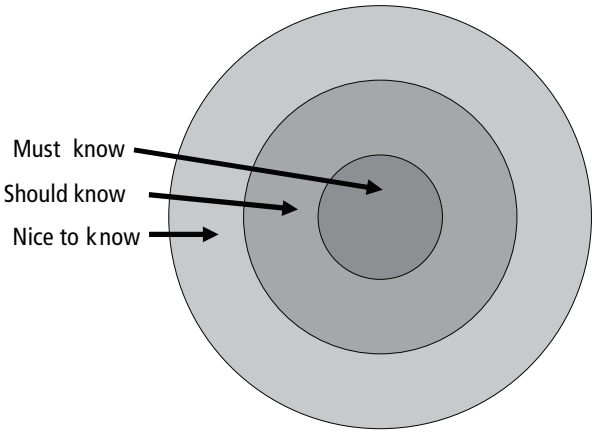
After this analysis we know exactly what the students have to learn. In fact, the items in the right hand column become our 'learning objectives'. We simply rewrite them as follows:

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.

SECTION FOUR

Methods of Teaching

There are many different teaching methods used. Most teachers use a limited number of methods – ones that they are used to and feel comfortable with. Unfortunately, these methods may not be the best that are available. This section aims to give some guidelines about the methods that teachers should use.

Teaching the different skills and enabling factors

Let's return to our earlier example. How would we normally teach the skills, knowledge and attitudes needed here?

Teaching eye care workers to manage trachoma

Skill/enabling factor to be learnt	Suitable teaching method
Diagnosing a case of trachoma	• Students see patients in an eye clinic, with an experienced clinician to check the diagnosis
Applying eye ointment Performing tarsal rotation	• Demonstrate each skill, then let students perform it under supervision until they are competent
Educating people and communities to prevent trachoma	• Let students practice educating people; give them feedback about the way they do it
Knowledge of symptoms, signs, stages, the organism, medication, anatomy, spread, prevention, etc.	• Give a lecture covering these facts • Refer students to pages in a textbook to study
An attitude of concern and caring	• Point out examples of good and bad attitudes to the students and discuss these together

From this example a basic rule becomes clear – *for each of the domains of learning, we have to use specific and different methods to teach the objectives in that domain.*

Sometimes teachers do not understand this. This leads to the following mistakes:

- Using the wrong method altogether. For example, instead of learning practically how to communicate, students are given a lecture about communication
- Using a correct method in an incorrect way. For example, only one or two students perform a skill under supervision, while the rest only watch

A feast of methods

The generations of teachers who have gone before us have developed a large number of methods. All of these methods are now available for us to use. Here are some of the most commonly used ones, in relation to the domains of learning:

Teaching manual skills

There is really only one way to teach a manual skill, and that is to carefully demonstrate it first and then let each of the students perform the skill under supervision. Both teachers and learners can be guided by *checklists*. Students get feedback, which means that the teacher shows them where they have made mistakes. Sometimes students practise on a *model* first, before working with a real patient – for example, they can inject an orange or they can practise examining each other.

About checklists

A checklist is a step-by-step, written description of a skill that is excellently performed. Here is an example, for the skill 'applying eye ointment':

	Competent	Partly done	Not done
• Greet the patient and explain what you are going to do. • Position the patient comfortably (sitting or lying down) • Check that the ointment and the prescription agree • Wash your hands • Open the tube of ointment and hold it in your dominant hand • With the index finger of the other hand, gently pull down the lower eyelid of one eye, to expose the lower fornix • With the nozzle directed toward the inner canthus, squeeze the tube slowly to allow about 1cm of ointment to emerge in a thin line inside the lower eyelid			

Checklists like this have several uses:

- Teachers use them when they demonstrate a skill, and to give feedback to students
- Students use them as a guide when they practise the skill
- Teachers use them to assess skills in an examination

Teaching communication skills

Communication skills can only be taught by making students practise them, after a demonstration, and giving feedback on their performance. We often use *role plays* to teach these skills – for example, one student gives a health education talk, while the others pretend to be a group of villagers. After the role play the teacher and the 'villagers' give feedback to the 'educator', again using a checklist of the skill.

Teaching decision-making or problem-solving skills

The most common decision that eye health care workers have to make is a diagnosis and what treatment should be given. We teach this as follows:

- We start by explaining to students how the problem-solving process works. There are two main methods that people use – the **'inductive'** and the '**hypothetico-deductive'** methods. Students have to know both.

Inductive method	Hypothetico-deductive method
• You collect as much information as possible about the patient or problem, and then come up with a list of possible solutions (or differential diagnosis) • You use the information you have collected to exclude some of the solutions until you end up with the most likely one • This is very time consuming. In real life clinicians only use this method if they really have no idea what is going on!	• You start coming up with possible solutions to the problem as soon as you have collected the most readily available information (e.g. what the patient tells you about their problem) • You only collect further information which will help you to confirm or reject those solutions or diagnoses (i.e. 'directed' information gathering). As soon as you have a solution which is certain enough, you stop • In real life this is the method clinicians mostly use. To use it well you have to be aware of the kinds of mistake you can make with it

- We then give students problems to solve (e.g. a clinical case), after telling them which problem-solving method to use. For the hypothetico-deductive method, we have to observe them as they work and ask them to explain, step-by-step, how their mind is working, as they collect information and begin to think of possible answers. We comment and give feedback on each step of the process, showing them where their reasoning is going wrong and why. Note that this takes time to do properly
- Such problems can also be written ones, such as *case studies* or *patient management problems*. Here we give students the information they need and ask them to diagnose the case and solve the treatment problem. Again, they have to explain, step-by-step, how they arrive at the answer so that we can give them good feedback

Teaching knowledge

Lecturing is the most common form of teaching knowledge. There are many other methods, most of which are probably better than lectures. Teachers may discuss important topics with small groups of students in *tutorials*. A group of teachers may present a *seminar* where they discuss different aspects of the same topic. Teachers may *discuss* a topic with students, drawing on what they already know about it. Teachers may arrange *educational visits* where students learn from what they see and experience. Teachers may give students *projects* to do, for which the students find the information they need themselves. If you are using a method requiring group work, it is important to keep the group size small, no more than 8-12, so that all can participate.

About lectures

There is no doubt that lectures are very popular with teachers – but are they the method of choice for teaching knowledge? Consider the following:

- Most students learn very little during lectures – they absorb the knowledge afterwards, by self-study
- It is surely a terrible waste of time to dictate notes to a hundred students, each having to take down the dictation by hand
- Studies have shown, without doubt, that lecturing leads to less retention than any other way of teaching knowledge
- The average attention span of people who sit listening to someone talking is around 10 minutes. This is why students get bored and go to sleep during long lectures.

What do you think? Perhaps it is better to 'teach' routine knowledge by giving good handouts, or referring students to pages in textbooks, for *directed private study*. Teachers should, rather, use precious classroom time to explain difficult concepts or to solve problems together. In any case there should be *interaction* between teachers and learners during lectures – the method should *stimulate* and *involve* learners, rather than boring them.

'Teaching' attitudes

Attitudes are relatively difficult to 'teach'. All teachers can really do is to *help students develop suitable attitudes*. A very powerful way is by *example*, since students imitate the attitudes of their teachers. Another way is to point out examples of good and bad attitudes, and to *discuss* these with the students – why should a good eye care worker have this attitude, and not that one? You can also instruct students to reflect in writing about the attitudes that they see in other health workers and to make a commitment to themselves about what they would like their attitude to be. Teachers and supervisors observe students and can give them *feedback* on how their attitudes are developing. Another strategy is to let supervisors give students marks for the attitude they display in their work.

For those readers who would like to know more about these teaching methods, we recommend the following books:

- Abbatt, F. and McMahon, R (1993), *Teaching Health Care Workers*, second edition, London: Macmillan. The ideas in this book are more 'formal', in the sense that it emphasises the discipline of using the right method for the right domain.
- Werner, D. and Bower, B. (1982), *Helping Health Workers Learn*, Palo Alto, California: Hesperian Foundation. This book is a real encyclopaedia of ideas for less formal, interactive teaching.

SECTION FIVE

Methods of Assessment

This section looks at a critically important aspect of teaching and learning – the assessment of students' learning. Why is it so important?

Assessment is the heart of learning

Assessment drives learning. Students take great trouble to find out exactly what the examination will be like. Why is this? Because they want to pass the examination, of course! There is always too much to learn, so it makes sense to concentrate on what you need to know to pass the exam. We may want our students to be able to make diagnoses – but if our tests only test facts, the students will quickly learn just to memorise facts. If, on the other hand, they know that the test consists of clinical problems to diagnose and manage, they will study each clinical problem in such a way that they understand it well enough to diagnose and manage it. If there is no practical in the exam the students will stay out of the wards and clinics to spend all their time with their books. But if they know there is going to be an OSPE, (see page 37), they will spend time with patients to make sure they have mastered all the skills.

REMEMBER! ASSESSMENT DRIVES LEARNING

What does this mean, practically? It means we have to plan our assessment very carefully in such a way, that our students will learn what we want them to learn. Teachers often spend more time on preparing lessons and teaching them, than they do on assessing the results. Any time you spend on improving your assessment will be richly repaid – your students will be better learners as a result.

Why do we assess students?

The main reason is obvious – we want to see if they have learnt what we have taught them. This kind of assessment, which is done at the end of a period of teaching, is called *summative* – it is a 'summary' of what the students have learnt. But there are also other reasons for assessment:

- Assessment is very important for our students because it shows them where they are falling short. This is why teachers should always discuss exams with students afterwards, to show them what the right answers were, and where they made mistakes. For the same reason students must be given their marks, and their exam scripts, as soon as possible. Assessment which is done in this way, while the students are still learning, is called *formative* – we are 'forming' or 'improving' the students.
- Assessment also gives the *teachers* important information. If the students do well in the assessment it also means the teachers are doing their job well. If not, the situation must be investigated. Perhaps the students are being overloaded, or the assessment itself is too difficult or tricky, or the students' studying and exam techniques are faulty.
- We are training health workers to do a job. To protect society, we should only send out students who are *safe* – who know their work well enough not to harm anybody. One of the reasons for our final examination of students is to make sure that they are safe. Society expects us to do a good job!

Assessment should be valid

Good assessment is valid. *This means that it tests what it is supposed to test.* Perhaps you want to assess your students to see if they can measure intraocular pressure. You can ask them to write short notes on how to use a Schiötz tonometer – but that will not tell you if they can really do the job. Your method of testing is *not valid*. A better way is to stand by and watch them while they perform it on a patient, then you will really know if they can do it properly. This second method of testing is *valid*.

In an earlier section, we discussed the domains of learning. We saw that each domain is taught in a different

way. The same is true of assessment: we assess each domain in a different way. In the table below, you will find examples of how we should assess the learning of our students, for each domain.

Skill/enabling factor to be examined	Suitable assessment method
Manual skill • Performing a tarsal rotation	• The student has to *perform* the operation on a patient with entropion, while the teacher watches and marks her/his performance with a *checklist*
Communication skill • Educating a family on how to prevent trachoma	• The student has to *educate* a family on the prevention of trachoma, while the teacher watches and gives marks with a *checklist*
Decision making skill • Diagnosing and treating a case of trachoma	• The students are presented with a patient suffering with trachoma. They have to question and examine the patient and *explain how they come to a diagnosis*, while the teacher *watches and questions* • The teacher can also give the students a *written case study*, which gives all the history and examination findings, and ask them how they would manage the patient
Knowledge • Knowledge of symptoms, signs, stages, the organism, medication, anatomy, spread, prevention, etc.	• *Written* examination with short answer questions, multiple choice questions (MCQs), essay questions • *Oral* examination
Attitude • An attitude of concern and caring	• The teacher *observes* the student as s/he works in the clinic. After a week or so the teacher uses a *checklist* to make a final assessment of the student's attitude

If you follow the guidelines in this table, your assessment is likely to be valid – it will test what it is supposed to test.

Some teachers like to ask 'trick questions' to catch out their students. Others like to ask questions about very rare, very obscure diseases. Such assessment is not valid. Valid assessment should be straightforward, and should focus on the 'must knows' and 'must be able to dos' – the things that are really necessary for day-to-day practice.

Finally, in every assessment the examiner has to take a *sample* of all that the students had to learn because there is never enough time to examine everything. To be valid the sample has to cover the whole range of knowledge and skills that the students were supposed to master.

Assessment should be reliable

Good assessment is *reliable*. This means that if we repeat the assessment on the same student at another time, or using another examiner, the mark will be the same.

Some forms of assessment are more reliable than others. An OSPE (see page 37) is more valid than old-fashioned practical sessions, which use different patients for different students. A written exam (where everyone gets the same questions) is generally more reliable than an oral one (where different candidates get asked different questions by different examiners).

You can make any form of assessment more reliable by giving a little thought to the matter. Practical exams are more reliable if you use a checklist to mark the performance of the student. Written exams are more reliable if the markers are guided by a very clear document which shows how marks are allocated for each question.

Multiple Choice Questions (MCGs) - beautiful but deadly?

MCQs consist of a leading statement or *vignette*, at the end of which there is a question. This is followed by a number of answers or *options* for students to choose from. Three types of MCQs are commonly used:

- A-type MCQs test the ability of the students to solve a problem. The vignette poses a problem (often a clinical one) and only one answer is correct – the last phrase in the vignette is something like – *'which one of the following is most likely?'*
- R-type MCQs are also called 'extended matching questions'. The question starts with 10–20 answers, followed by a series of vignettes. The answer to each vignette is one of the answers at the head of the question.
- In X-type MCQs the examiner is assessing facts. The vignette is usually short and two or more of the five options may be true. The last phrase in the vignette is something like – *'which of the following statements is true?'*

MCQs have become popular because they are very reliable and are also very easy to mark. On the other hand they have a number of serious drawbacks:

- Students often misunderstand part of the MCQ (vignette or options)
- In X-type questions, every option must be totally true or totally false. They are therefore only suitable for assessing pure facts and not the application of facts (which A-type and R-type MCQs can do)

For these reasons MCQs often have low *validity*. They have to be carefully tested to see if students understand them correctly. People who write MCQs should receive training first or consult a manual.

The following manual is recommended for MCQs and is available free of charge on the Internet:

Case S.M., Swanson D.B. (2001), *Constructing Written Test Questions for the Basic and Clinical Sciences*, third edition, Philadelphia: National Board of Medical Examiners.

What is an OSPE?

The OSPE is a special kind of examination that is now commonly used. What do the letters mean?

- **O** stands for ***Objective***. If different students are given different patients to examine, this could be unfair: some patients and conditions are easier to examine than others. So, in this examination, every student gets the same patient and the same examiner and this is why we say it is *objective*
- **S** stands for ***Structured***. Several skills are tested at one time. Each skill is tested in a separate room called a *station*. At each station there is a card with clear instructions for the student, all the equipment s/he needs, a patient (if necessary), and an examiner with a checklist for doing the marking. There may be ten such stations in an OSPE and ten students are then examined together. Each starts at a different station and, after 10–15 minutes, a bell rings and they move on to the next one
- **P** stands for ***Practical***. This means that this exam is practical – it *only* tests the *skills* of the students. It could be manual skills, like examining the anterior chamber of the eye, or it could be a communication skill, like taking a patient's history. Some people prefer the word ***Clinical*** – so that makes their exam an 'OSCE'
- Finally, **E** stands for ***Examination***. Good OSPEs are an excellent way of examining skills. They take a lot of time and preparation, as do all practical examinations

SECTION SIX

Teaching and Learning Resource Materials

This section will deal with the criteria for selecting materials, advise on accessing teaching resources and suggest strategies for continuing education.

The Oxford English Dictionary defines the word 'resource' as 'the means of supplying a want or a need'. The *Community Eye Health Journal*, with its theme-orientated approach, has attempted to inform readers of current relevant educational materials in each issue. Readers regularly request learning and teaching resources, but are these always appropriate and used effectively?

Selection criteria

Context and relevance

Choosing material because someone has recommended it as 'a really good resource' does not ensure it will be effective. It is therefore important to consider:

- ***Who*** *the users will be*

Are they health workers, professionals, Ministry of Health officials, schoolteachers, or patients? Are the materials needed for eye care education for those working at primary, secondary or tertiary level?

- ***Where*** *the materials will be used*

Will it be in a lecture hall, classroom, community room?

- ***What*** *facilities will be available*

Will there be suitable seating arrangements, a projector, flipcharts, computer, videotape player, good lighting, blackout blinds?

- ***How*** *the materials will be used*

Will the teaching method used be didactic, interactive, group work, project assignments?

Format

Many formats are now available. Photographs, slides, overhead transparencies, videotapes, DVDs and CD ROMs are useful visual aids to complement didactic teaching or written text. The best way of teaching the subject may however be face-to-face teaching, where the teacher conveys her/ his experience by means of demonstration, practice and supervision in a clinical situation. Posters are very popular for teaching purposes but care must be taken to display them in appropriate places – stairways can prove unsafe and nervous patients will not appreciate clinical or pathology pictures in a waiting area!

If we make teaching materials for ophthalmic patients to use (e.g. patient information leaflets for health education and promotion) it is vital to prepare these in accessible formats such as large print. Audiotapes are particularly appropriate for reinforcing verbal information given to ophthalmic patients.

There are many advantages and disadvantages to consider when choosing formats.

Teaching and Learning Resources – Uses, Advantages & Disadvantages

Format	Uses and advantages	Disadvantages
Video	• Shows real situations • Demonstrates skills, attitudes and behaviour (good and bad!) • Can be stopped to allow discussion • Self-teaching	• Screen must be large enough for the size of audience • Equipment may be expensive or unreliable and should be transportable • May need room blackout
Slides	• Can convey complex information e.g. bar graphs, pathology • Uses large screen – good for lecture halls • Easily transportable • Teacher can be selective and flexible in choice of image and message • Often supplied with supporting text	• Equipment not as easily transportable as the slides • May need room blackout
Overhead transparencies	• Cheap and easy to produce • Overlays can build up information. Flexible – useful for any size of audience • Equipment available in transportable size and reasonably priced	• Spare bulbs should always be available • Teacher can obstruct view • Written information must be large enough to be read by all the audience • May need room blackout
DVD / CD ROM	• Interactive • Sophisticated and complex text • Easily transportable	• Requires expensive equipment Prohibitively expensive connection charges in some countries • Potential for information overload Skills needed to access only appropriate material
Internet	• Up to date information • Free availability of many materials – can be downloaded	• No guarantee of quality
Textbook	• Familiar and trusted reference tool • May reflect specific course content • Durable	• Individual user only • Expensive to buy and deliver in bulk
Booklets Leaflets Handouts	• Home-made versions can be produced cheaply • A good handout will reinforce important points of a topic	• Teacher sometimes tempted to photocopy full articles to act as a handout, which are not applicable Commercially produced items can be expensive and contain advertisements • Usually produced in bulk – can be wasteful
Posters Charts Displays	• Raise awareness • Conveys information on other sources – contact details, etc. • Home-made versions can be produced cheaply	• Can be difficult to transport • Needs lamination • Written information must be large enough to be seen at a distance • Need to be changed frequently • Commercially produced version may contain advertisements

Cost

Cost may be an important constraint. In an attempt to be helpful and meet the needs of users, suppliers will sometimes offer surplus, out of date materials, free of charge. Be careful of this kind of material – it is not always appropriate to your actual requirements. Similarly, many commercially produced teaching materials (posters, booklets and videos etc.) are now available from pharmaceutical and equipment companies. Offered free of charge, they attract users with limited financial resources. The content will often, understandably, reflect the sophisticated materials they produce – and may even carry advertisements, which may result in inappropriate messages in certain situations.

Accuracy

If they are to achieve their aims, teaching materials must be up-to-date, applicable, and cover the required scope of the subject. Health practice is ever-changing and this is reflected in the rate at which medical textbooks appear in new editions.

Language and culture

Teaching resources, first and foremost, need to be understood. Availability in the local language makes any learning resource more attractive and valuable and increases its demand. Sadly, most materials are available in English only. Where English is not the user's first language, but is the language used in the workplace or educational institution, the materials must be produced in plain English. Applying a 'Gobbledygook Test' will help decide if the text contains plain English before purchasing in bulk, e.g. books for a whole class (Ewles and Simnett, 1998).

The Gobbledygook Test

- Count a 100 word sample.
- Count the number of complete sentences in the sample.
- Count the total number of words in the complete sentences.
- Divide the number of words by the number of sentences.

This gives the average sentence length.

- Count the number of words with three or more syllables in the 100 words. This gives the percentage of long words in the sample. Numbers and symbols are counted as short words; hyphenated words are counted as two words; a syllable, for the purposes of the test, is a vowel sound. So, 'advised' is two syllables and 'applying' is three.
- Add the average sentence length to the percentage of long words to give the test score: the higher the score, the lower the 'readability'.

It is usual to do this three times to three different samples, one from the beginning of the text, one from the middle and one from near the end. These scores can then be added and divided by three to give the average score.

This test is based on R.Gunning's FOG (Frequency of Gobbledygook) formula as adapted by the Plain English Campaign.

The content of teaching material should not assume that all target groups are the same. At the same time it needs to be culturally appropriate and reflect local practice, conditions, available health services and the values and concerns of users.

Accessing teaching resources

Ordering from a supplier

When placing an order, don't assume that the supplier will know exactly what material is needed! It is wise first to ask a supplier to provide a publications list on which you can indicate the title and quantity required. When you place an order and there is no printed order form, the following details will help the supplier to provide the correct publication:

- Full title of publication
- Author(s) name(s)
- Edition
- ISBN (international standard book number)
- Price
- Publisher
- Date and place of publication

It is important the purchaser and supplier agree the amount and method of payment beforehand. Full name and address must be included in the purchase order. Ordering via the Internet requires advance payment by credit card. Some suppliers only deliver to a physical address, not a post office box.

A second edition of the '*Directory of Teaching and Information Resources for Blindness Prevention and Rehabilitation*' is available from the International Resource Centre, ICEH. This publication lists some 27 organisations which supply teaching materials on many topics, at varying levels and in selected formats and languages (Stevens, 2004).

Basic guidelines for producing teaching materials

Many excellent teaching materials are 'home-made', unpublished and unavailable through a supplier. Remember – this does not make them inferior! Indeed, materials produced specifically for local use are often more effective. When producing materials, whatever the situation, the following guidelines are recommended (Ewles and Simnett, 1998):

- Consider the educational background of your users.
- Test materials on a sample of users and modify the material accordingly. It is unwise to assume that users will find your first efforts helpful.
- Use plain English or local language(s) in the active tense.
- Keep the message brief, to the point and avoid irrelevant material.
- Emphasise key messages using bold, appropriate size and style fonts and colour.
- Use pictures when the message can be conveyed in this way – but make sure this approach is field tested to check for misunderstandings.
- Apply the Gobbledygook Test to your own materials too!
- Use words that reflect the reality of the situation – e.g., don't use the word 'ophthalmologist' if there isn't one working in the project.
- Inclusive language (including women and men) will help to avoid offence and feelings of inadequacy.

You will also need to consider who will write the draft, who will edit it, where you can field test it and what it will cost to produce. Also consider if it will involve desk top publishing, a designer, illustrator, translator and printer. This will apply to whatever format you aim to produce.

Strategies for continuing education

Resource centres

Core teaching materials must be accessible to learners. Increasing health information is potentially the most cost-effective measure for improving health care in developing countries (Pakenham-Walsh et al., 1997). Any project or teaching centre can set up a 'resource centre'. The International Resource Centre at the International Centre for Eye Health (ICEH) in London started life as a shelf in the Journal editor's office! It is advisable to keep learning materials in a central point with someone responsible for their cataloguing, allocation and safekeeping (Giggey, 1988).

In September 2000, the International Resource Centre launched a three-year project supporting the setting up of Regional Resource Centres in Africa, Asia and Latin America. This was done with financial support from *Sightsavers International* and *Christian Blind Mission International*. As a result six new Centres were established: in India, Pakistan, South Africa, Colombia, Nigeria and Tanzania. These now aim to help meet the educational and information needs within their regions:

Motswedi Information Centre	South Africa National Council for the Blind PO Box 11149, Hatfield 0011 Pretoria, South Africa	hope@sancb.org.za www.sancb.org.za
Raja Mumtaz Regional Learning Resource Centre	Pakistan Institute of Community Ophthalmology PO Box 125 Hyatabad Peshawar, Pakistan	rlrc@pico.org.pk www.pico.org.pk
Centro Oftalmologico Latinoamericano de Recursos Informaticos en Salud	Fundación Oftalmológica de Santander Apartado Aereo 3128 Urbanización el Bosque Autopista a Floridablanca Bucaramanga, Santander, Colombia	saludpublica@foscal.com.co www.foscal.com.co
International Centre for the Advancement of Rural Eye Care	LV Prasad Eye Institute Post Bag No.1 Kismatpur BO, Rajendranagar PO Hyderabad 500 030 Andhra Pradesh, India	murali@lvpei.org www.lvpei.org
Ophthalmic Resource Centre for Eastern Africa	Kilimanjaro Centre for Community Ophthalmology, PO Box 2254 KCMC Moshi, Tanzania	orcea@kcco.net www.kcco.net
VISION 2020 West Africa Resource Centre	West African Postgraduate Medical College 6 Taylor Drive Off Edmund Crescent Yaba, Lagos Nigeria	V2020_rescentre@yahoo.co.uk No website

Human resources

Information technology (IT) is the newest development contributing to health communication. Through it, health workers everywhere can easily be linked, and IT makes available to them a wide range of resources. Most sites are 'read only' but some are interactive with some health libraries providing 'touch screen' facilities. But the best way of meeting learning needs undoubtedly remains people – the 'human resource'.

Following local, national or international courses, participants can be supported by means of peer networking and the organisation of 'alumni' meetings. Lists of delegates at conferences are a useful way of facilitating follow-up and for providing relevant resource information. We can easily share information with like-minded colleagues, even at a distance, through the ever-increasing use of electronic newsletters.

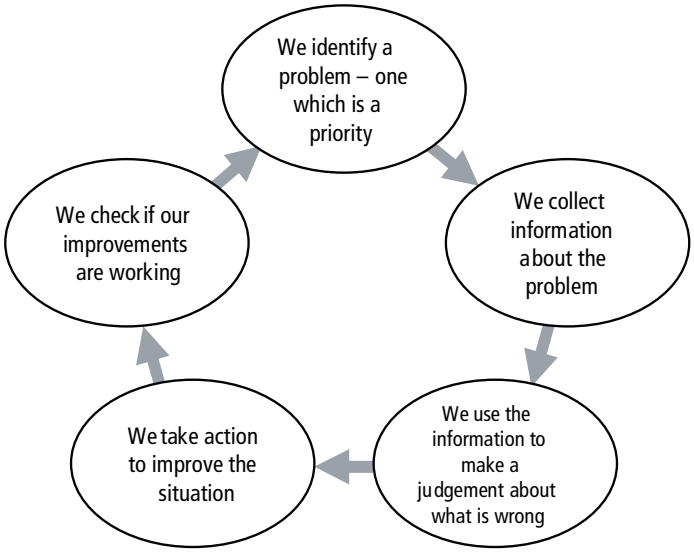
As individuals we all can contribute in some measure to learning and spreading information. By sharing our own knowledge and experiences, however limited, with others, we help to make 'VISION 2020: the Right to Sight' a reality.

SECTION SEVEN

Evaluation of Training

'Quality assurance' and 'appraisal' are words we often use nowadays. Training institutions in many countries are trying to improve the quality of the training they provide. This is not new – good teachers have always looked critically at the way they teach, in order to do it better.

What is 'evaluation'? Broadly speaking, it means looking carefully at something that we are worried about, and then making a judgement about it. We usually do this because we want to improve the thing we are looking at. The following diagram shows this process more clearly:



We call this the *'evaluation cycle'*. Once you have seen if your plan of improvement is working you may identify a new problem in your teaching, and evaluate that again.

This is clearly a kind of research. Perhaps you feel, *'I'm not an evaluator! I can't do this kind of research!'* Another way of looking at evaluation is that you use your common sense to judge what you (and other teachers) do in your work. If you think back, you will see that you have often done it (for example, when you review an examination paper after the exam) – but this section should help you to do it more systematically. Also, you don't have to evaluate everything at once. You can choose a small part of your work which seems to be giving particular trouble and start by looking at that. What might this be?

Things teachers evaluate

The curriculum – what we teach

Curricula get out of date easily and people just go on year after year teaching the same things. Here are some areas you might want to look at:

- The overall curriculum – is it complete? Does it contain all the knowledge and skills that the students are going to need to perform their job?
- The overall curriculum – is it overloaded? Are you teaching a lot of 'nice to know' and 'nice to do' material, in stead of concentrating on the 'must knows' and 'must be able to dos'?
- The content of individual lessons – do they contain what the curriculum planners intended them to? Do they emphasize priorities and leave out the rest? Does the teacher present the material in a sequence which helps students to understand it more easily?

The lesson process – how we teach

- The teaching methods – are they appropriate for the 'domain' of the material you are teaching? Do students learn skills by seeing a demonstration, and then practising the skill personally?

- How well do teachers use these methods? Are lectures well prepared and skilfully delivered, and do they interest and involve the students? Are practical sessions well organised, with checklists, and do all students practise and get feedback about their performance?
- The teaching aids that are used in class – is their quality good? Are they well used and do they help the learning process?
- The handouts and written documents – do they focus on priorities? Are they clearly written, using simple language? Are they suitably illustrated?

The assessment – how we test our students

- Is the *assessment valid?* Is it suitable for the 'domain' of the subject matter (for example, do we assess skills by observing students perform them)? Does it mostly assess the 'must knows' and 'must be able to dos'? Does it cover most of the important topics?
- Is the *assessment reliable?* Are there good marking schedules and checklists to guide the examiners so that they give fair marks?
- What is the *'assessment curriculum'?* Does the assessment make students learn those things which we consider to be the priorities?

The product – how well our students perform in practice

In the short-term you will need to find out if the participants have mastered the tasks and learning components in the course. Obtaining feedback during and immediately after the course can do this. In the long term you will need to find out if they are actually putting into practice the new ideas they have learnt and carrying out the activities in the job description previously developed. One way to do this is to make supervisory field visits to trainees, their employers and the community. At this time you can discuss the impact of the course. Depending on the objectives of the training it might be appropriate to look for any impact in the community using indicators such as increased utilisation of eye care services, support for prevention activities and changes in community behaviour.

These are just some of the possibilities. Of course, you will decide, from your situation, what you should be looking at.

Instruments to collect information for evaluation

Once we have identified a problem we need to collect more information about it. How do we do this? There are a number of 'instruments' that we commonly use to collect data for evaluation:

Document study

Here we examine written curricula, timetables, lesson plans, visual aids, handouts, exam papers and so on. We compare them to a standard that we have set beforehand. This can be done in an unstructured way (by reading them and gaining an overall impression), or more structured (by making a checklist, beforehand, of things we are looking for in the document). One special kind of document study is the 'readability test' (e.g. the Cloze and Gobbledygook tests) which we can use to assess handouts and textbooks.

Observing practice

Here we sit in on classroom and practical teaching and observe what is going on. We can do this in an unstructured way (by writing down what happens and analysing it afterwards), or a structured way (by having a checklist of things we would like to see happening and checking if they do). Of course, we sit right at the back of the classroom, quietly, not interfering with the process that we are observing. We can also ask colleagues or even students to observe us as we teach.

Questionnaires

We use these when we want to know people's opinion about an aspect of a training course – practical arrangements, the relevance of the material that is taught, what happens in class and so on. Again, questionnaires can be unstructured (asking the respondents to write general comments on how they feel about the topic) or structured (giving questions with pre-prepared answers, from which they have to choose the one they prefer). Besides the usual questionnaires there are some special ones that we use:

- The 'student happiness questionnaire'.
- Diaries – we ask teachers or students to keep diaries of their experiences on the course.

The 'student happiness questionnaire'

It is common practice to present students with a questionnaire at the end of a part of a curriculum or at the end of a term. The students are asked what they liked or disliked about the content, the teaching, the assessment, the practical arrangements. This can provide useful information about problems. However it must be used with caution:

- Students may be wrong – for example, since they lack a wider understanding they may believe (wrongly) that some of the course content is unimportant
- Teachers may believe that this is all the evaluation you need to do
- If it is routinely done, year after year, teachers tend to ignore the findings

Interviews (with individuals) and discussions (with groups)

These are useful when we want information from people about aspects of our courses and teaching, but in more depth and detail. We carefully prepare some questions and put them to the persons concerned. Then we record exactly what they say (by hand or with a tape recorder) and analyse the information afterwards. What were the main points that the respondents raised?

Ready-made data collection instruments

Other teachers who have gone before us can help us with evaluation. It is often possible to find ready-made data collection instruments, which deal with a variety of common problems in teaching. A good source of these is the following book:

- Gibbs, G. and Habeshaw S. (1988), *53 Interesting Ways to Appraise your Teaching,* Bristol: T&ES

Such instruments have been tested and refined, and should provide us with useful information. Of course we don't use them uncritically – they usually need to be adapted a bit to fit our own situation.

Who should evaluate?

Who is best placed to evaluate teaching practice? Do you do it yourself (an 'insider'), or do you get someone else to do it for you (an 'outsider')? Do you evaluate your own practice, or that of your colleagues? The advantages of doing it yourself, about your own work, is that you understand it thoroughly – the background, the players, the details. The disadvantages are that you may be inexperienced in evaluation, and that you are used to looking at your work in a certain way and it is difficult to see it objectively. So an outsider coming with a fresh view may be more useful. Outsiders usually want to be paid though!

Three tips

Firstly: when someone asks you to do an evaluation you must be *opportunistic*. Of course you are going to collect specific data with instruments you have prepared. However, you should use every opportunity to get additional information. Talk to everyone you meet (and keep notes on what they say, look at notice boards and classroom walls (making notes of relevant information), go into the course filing cabinet and read relevant documents. In this way you gain a deeper understanding which helps you to make the right judgements.

Secondly: when you evaluate training courses you are looking at a whole *system*. This system is made up of teachers, students, sponsors and employers, buildings and classrooms, learning materials. Each of these has an influence on the others. Try to understand as much as possible about how these parts of the system affect each other. That will help you to make a better judgement.

Thirdly: one of the aims of evaluation is to find and clarify problems. However many people find it difficult to accept that they have been making mistakes. Therefore, you have to present your judgements – your *feedback* – in a sensitive way.
Start by listing all the good things that you found (and you will find them). Then, once you have affirmed the persons you are evaluating, you can mention the shortcomings in a polite and non-judgmental way.

Here are two further books on evaluation which we have found helpful:

- Harris, D. and Bell, C. (1986), *Evaluating and Assessing for Learning*, London: Kogan Page.
- Hopkins, D. (1989), *Evaluation for School Development*, Milton Keynes: Open University Press.

Glossary of terms used in teaching

Aims: A general statement of what is intended in a particular lesson or course of study

Assessment: A means of comparing students' actual achievement with a desired standard of achievement as outlined in the syllabus

Brainstorming: A collection of ideas shared in a group encouraging free expression

Buzz group: Discussion in groups of 2–4 people

Case study: **** Text description to facilitate imagination and discussion of a possible situation

Course design: The systematic planning of a period of study for a particular group of students

Curriculum planning: A plan worked out in advance fixing the order or the timetable of a group of educational activities for a particular course – aims, content, methods, evaluation

Demonstration: Teacher activity**,** e.g., to teach a practical skill or why certain outcomes occur

Directed private study: Time set aside by the teacher for students to study a particular subject

Evaluation: The process of reviewing particular areas of study to estimate their effectiveness according to student needs and any changing factors

Exposition: An interrupted lecture where the teacher will stop to answer a question or explain further

Feedback: Information received by the teacher about the success of, or problems experienced with, a session or course as it is progressing

Learning objectives/outcomes: Specific statements of behaviour by a student after a period of learning – proving they have learned

Learning strategies/teaching methods: Activities chosen by the teacher to help students learn

Lecture: Subject introduced and delivered by the teacher in a specific time which transmits information

Lesson plan: A 'sketch map' of a particular session for a particular group of students, based on objectives and teaching methods with intended timing of activities

Practical: Student activity, e.g., learning a skill or group work

Programmed learning: A planned exercise to enable individual learning, e.g., in a manual or a computer programme

Project: A task based on investigation with a specific time-table; the teacher will advise the student on resources and materials – the student reports back with findings, usually in written format

Resources: (a) Any source of information from which students are able to learn, e.g., library, teaching materials, human resources (other students, teachers, etc.) – all these are referred to as 'learning resources'.
(b) Funding, staffing, equipment – anything required to run a course

Role play: **** Similar to case study (see above). A situation is acted out to create insight into students own behaviour

Scheme of work: A session by session plan addressing a specific topic for a particular group of students which includes objectives, methods, content, resources, and assessment procedures – based on a syllabus

Seminar: A group of about 8 -12 people following up something that has already been introduced on the course – involves reading of an essay or paper by one group member followed by discussion

Simulation: **** Similar to a case study and role play (see above)

Syllabus: A statement of aims and content for subject areas

Syndicate work: A task given by the teacher to a group of students to complete in a period of time – the students are required to report back to the teacher

Tutorial: One-to-one teaching (student and teacher) usually for counselling purposes based on the student's work

Weighting: The emphasis, in terms of time and the allocation of marks in assessment, placed on an area of study in comparison with other areas of study

References

Abbatt, F. and McMahon, R. (1993), *Teaching Health Care Workers*, second edition, London: Macmillan.

Case, S.M. and Swanson, D.B. (2001), *Constructing Written Test Questions for the Basic and Clinical Sciences*, third edition, Philadelphia: National Board of Medical Examiners.

Ewles, L. and Simnett, I. (1998), *Promoting Health – A Practical Guide*, fourth edition, London: Baillière Tindall.

Gibbs, G. and Habeshaw, S. (1988), *53 Interesting Ways to Appraise your Teaching,* Bristol: T&ES.

Giggey, S. (1998), *Rural Community Resource Centres – A Guide for Developing Countries*, London: Macmillan.

Handy, C.B. (1976), *Understanding Organizations*, Harmondsworth: Penguin.

Harden, R.M., Sowden, S. and Dunn, W.R. (1984), *'Educational Strategies in Curriculum Development: The SPICES Model', Medical Education*, 18, pp.284–297.

Harris, D. and Bell, C. (1986), *Evaluating and Assessing for Learning*, London: Kogan Page.

Hubley, J (1993), *Communicating Health*, London: Macmillan.

Pakenham-Walsh, N. et al. (1997), *'Meeting the Information Needs of Health Workers in Developing Countries', BMJ*, 314, pp.90–91.

Pedler, M. (1974), *'Learning in Management Education*', *Journal of European Training*, 3(3), pp.182–195.

Stevens, S. (2004), *A Directory of Teaching and Information Resources for Blindness Prevention and Rehabilitation*, 2nd edition, London: International Centre for Eye Health.

Stones, E. (1966), *An Introduction to Educational Psychology*, London: Methuen.

Werner, D. and Bower, B. (1982), *Helping Health Workers Learn*, Palo Alto, California: Hesperian Foundation.

This publicaton is supported by

CBM International

DARK & LIGHT BLIND CARE

cnhf

Stanley Thomas Johnson Foundation

sightsavers INTERNATIONAL

Tijssen Foundation

ORBIS saving sight worldwide