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ABSTRACT

This book is intended for beginning and experienced Technical and Further Education (TAFE) teachers who want to develop new teaching skills or refresh their existing skills. It covers the following topics: the teaching context (colleges, teachers, courses, students, and student motivation); the teaching process (the teacher as a professional, a model of the teaching process, and components of the teaching process); procedures in writing and using objectives (types of instructional objectives and their use in TAFE and the qualities and importance of objectives in teaching); steps in planning teaching (establishing lesson objectives, researching lesson material, selecting a teaching method, writing a lesson plan, and preparing aids and resources); procedures in organizing content (sequencing and formatting units of work); techniques for use in meeting the first class; teaching large and small groups; the importance of questioning as a teaching technique; procedures for teaching individuals (supervising individual students and using individualized learning programs); steps in teaching practical skills; instructional aids (selection principles and common considerations, the most common instructional aids, and computer-assisted instruction); background resources; assessment of student achievement; procedures for solving concerns of students and teachers; course evaluation; and principles of learning and teaching. (MN)

TEACHING IN A TAFE COLLEGE

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TEACHING IN A TAFE COLLEGE

William Hall and Staff of the
Institute of Technical and Adult Teacher Education (ITATE)
of the Sydney CAE

Illustrated by Roger Harrington
Photographs by NSW Department of TAFE

PREFACE

This book is a straightforward, jargon free, guide on 'teaching' in TAFE Colleges. It has been written for all TAFE beginning teachers, part-time teachers, teacher trainees and experienced teachers who want to refresh their knowledge and teaching skills. All other adult educators will also find the book useful. It has been written for those teachers who will teach students face-to-face, although many chapters will be useful to those whose teaching is through off-campus studies.

Each chapter has been structured in the same way: overview (giving the purpose of the chapter), the chapter's material, and a summary with references if required. Although about techniques, the book avoids an extreme behaviourist approach. There are plenty of TAFE examples, and the unifying theme draws together the different components of the teaching process, showing how they are interrelated and interdependent.

It is not intended that the book should be read like a novel, starting at chapter one and reading every chapter in turn to the end of chapter sixteen. Nevertheless, chapters one and two should be read first by beginning teachers, and chapter two should be read by everyone because the whole book is built around the curriculum model described in that chapter.

The book does not give quick and simple solutions to problems. There are already plenty of short booklets providing 'tips for teachers' which already do that. This book adopts a more thoughtful approach.

Production of the book has been a team effort. Over one-half of the chapters were written by teaching staff at the Institute of Technical and Adult Teacher Education (ITATE) of the Sydney College of Advanced Education. These people are: C. Bennett, L. Field, R. Pithers, A. Tennant, D. Thew, A. Watson and G. Woodburne (now with the NSW Department of TAFE).

Another group, comprising South Australian TAFE teachers, helped to develop the book and to comment on draft material. These people are listed below. Without their practical advice, the book would have been much less useful.

J. Gosbell	Kingston College of TAFE
T. Haig	Panorama Community College
S. Hardwick	Adelaide College of TAFE
G. Hatcher	Elizabeth College of TAFE
P. Hollington	Elizabeth College of TAFE
D. Keenan	Port Adelaide Community College
G. Kinsman	Panorama Community College
G. Morris	Elizabeth Community College
D. Strempel	Gilles Plains Community College
P. Watts	Port Adelaide Community College
D. Wells	Marleston College of TAFE
K. Wilkins	Regency College of TAFE

Examples given in many of the chapters are from three main sources: ITATE publications; State TAFE in-service booklets; and the project's South Australian advisory committee (listed above). The help of all of these organisations and individuals in providing material is gratefully acknowledged.

Finally, two TAFE lecturers (one a full-time beginning teacher and the other an experienced part-time teacher) gave invaluable advice and encouragement. They are Helen Wilmar and Brenten Burden. The word processing was efficiently done by Giulia Reveruzzi.

William Hall
Adelaide 1987

CONTENTS

CHAPTER ONE: THE TEACHING CONTEXT (W. HALL)

1. PURPOSE OF THIS CHAPTER

The purpose of this chapter is to describe the context of your teaching - the college, where you will work, the students you will meet and some of their characteristics, and the courses taught. A brief overview of the rest of the book is also given. The chapter is divided as follows:

After reading the chapter you should have a better general understanding of what goes on in a TAFE college and know more about students and their courses. However, this is just an introductory chapter and so much of what is written will be enlarged upon in later parts of the book.

1.1 COLLEGES

You are doing one of the most important jobs. You are a teacher. Furthermore, you are teaching in one of the most fascinating, diverse and important areas of education: technical and further education (TAFE). TAFE is one of the three sectors of post-secondary, or tertiary education. The other two sectors are universities, and colleges of advanced education (CAEs). These two sectors are frequently called 'higher education'. Figure 1.1 illustrates how the different sectors are linked.

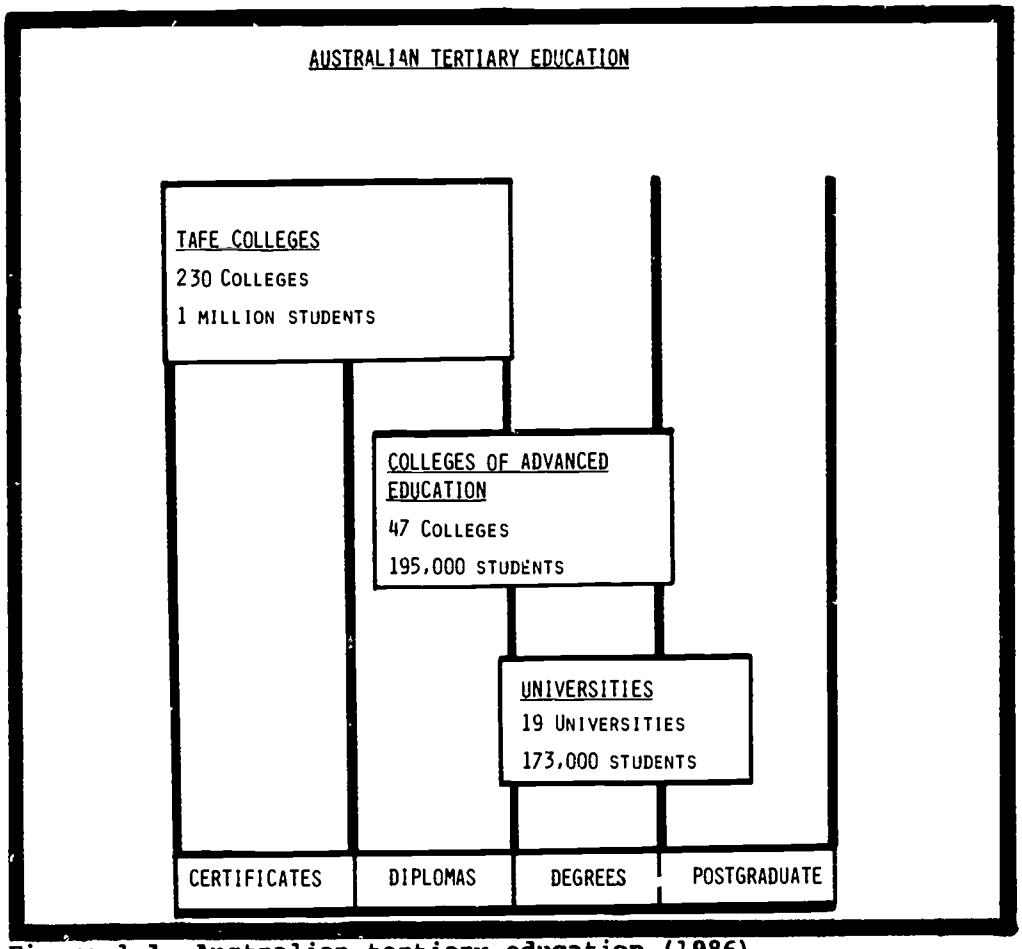

Figure 1.1 Australian tertiary education (1986)

There are over one million TAFE students. Indeed, TAFE enrols more students than the other two tertiary sectors combined and it has more colleges than the other sectors. Sometimes a State's TAFE colleges are part of a TAFE Department (as in New South Wales, South Australia and Victoria) and sometimes TAFE is part of a Department of Education which also deals with schools.

TAFE colleges range in size from small, mono-purpose institutions of a few hundred students, through to huge multi-purpose colleges enrolling thousands of students. Colleges are sometimes built on one site, or they can be multi-campus. All have an administrative structure which you should find out about so that you know who is responsible for making particular decisions in your college.

All colleges have senior administrative staff (headed by a Principal, or Director), support staff (secretaries, workshop technicians, etc.) and senior teaching staff. Teachers are either full-time or part-time, with much of the evening teaching being done by part-time staff. All beginning teachers are members of a team. Your immediate superior will be able to answer your most urgent questions and explain to you what facilities exist. A typical college structure for some States is shown below. However, it must be emphasised that States and Territories do differ and so the structure might not apply to your college. For example, in Victoria the term 'Director' is used instead of 'Principal' and in some States the term 'lecturer' is used instead of 'teacher'.

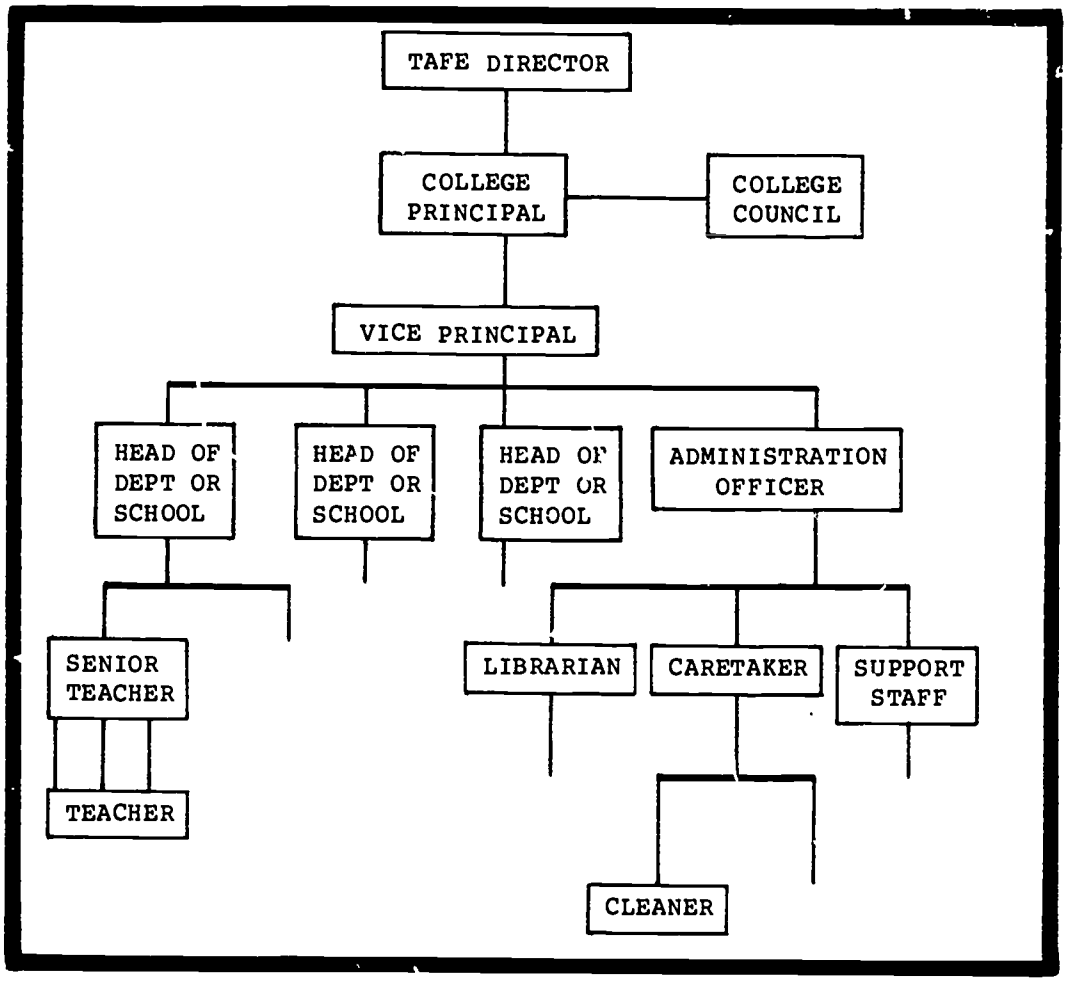

Figure 1.2 A typical college structure

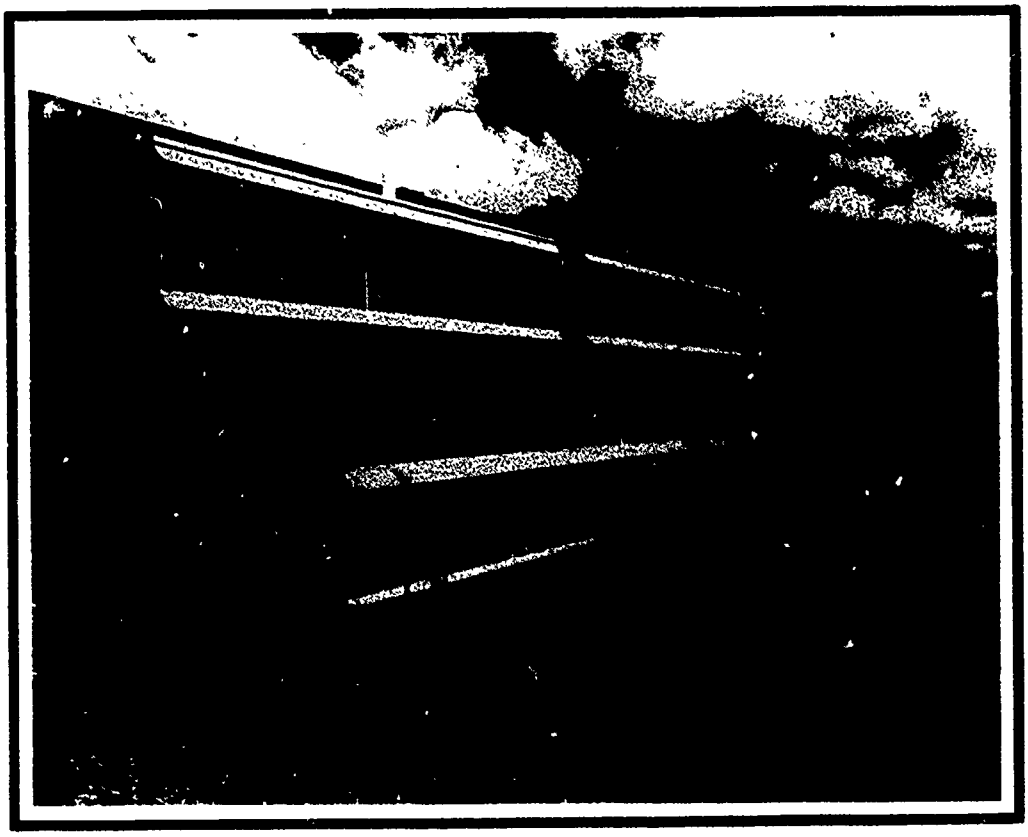

Figure 1.3 A new TAFE college

As a beginning TAFE teacher, therefore, you will probably find that the hierarchy consists of lecturer / senior lecturer / head of department or school, vice principal/principal. Your immediate superior will be the senior lecturer (or head of department).

Clearly, it would be foolish not to find out all that you can about your college if you are just about to start teaching there, or about to undertake practice teaching as a student. Your first day will be hectic enough without the added strain of not knowing even the basics about the college. Therefore, you should seek to obtain this information prior to your first day and, if possible, you should visit the college to learn where different rooms (library, staff room, your desk, toilets, canteen, etc.) are located, whether there is a signing-in procedure, what paper work should be completed, and what local conditions of service will apply. You should join the library, or resource centre (see Chapter 13).

1.2 TEACHERS

Students will have certain expectations of you as a professional. For example, you will be expected to dress and behave appropriately. For clothing, a dark grey business suit will not normally be expected - but clean, smart clothes will be required. Even in summer, thongs, singlet and very brief shorts would not be acceptable. Neither are dirty, ragged overalls. A suitable standard of oral communication is also essential if mutual respect is to be preserved. Rude language will not gain respect, nor will sarcasm. Arrival at classes on time, prompt and careful marking of student assignments, and good, practical, knowledge of what you are teaching, and the ability to present information clearly, are all important. All of these things are discussed in detail in later chapters.

Consider this teacher's first class and decide what was incorrect in this first encounter. (Teachers have confirmed that situations like this do occur.)

Teacher: All right you lot, shut up. (Noise continues.)

Teacher: I said, 'Shut up'. Don't you slobs know how to behave? There are plenty more unemployed people out there who would gladly take your places. So shut up and pay attention.

(Class, now quiet, looks antagonistic.)

Teacher: Now, my name's Smith. I want you to enjoy this subject. If you've got any problems, come to me and I'll solve them for you.

Do you think that any members of that class would take problems to Smith? Consider this, very different approach.

Teacher: Good morning. (Waits for silence.) Welcome to my class. I hope we get to know each other quickly. Let's start by giving our names. I'm George Smith. Now, perhaps you would be good enough to let me know your names.

Detailed information about the first lesson is given in Chapter 6.

TAFE Colleges are places for teachers to be happy in, as well as for students to receive enjoyment from their education! Remember that you are just as much an individual as are the students you teach. Therefore, do not feel that you must teach exactly like everyone else - develop your own approach. This book does not present the one-and-only way to teach, because there is no single way.

Occasionally, problems will arise and some ways of tackling these are discussed in Chapter 15. In such cases, do not hesitate to seek advice from more experienced teachers. A list of house telephone numbers can be useful. Also students will respect you if you frankly admit a mistake, although their confidence will be shaken if you do this too often! It can be helpful for beginning teachers themselves to meet together regularly to share their worries and ways of dealing with problems. The first class is especially important and so this is dealt with in a section of the next chapter followed by more detailed discussion in Chapter 6.

Although it can sometimes be difficult, try to avoid taking your personal problems to classes. Student counsellors (see Chapter 13) can often be of help to staff as well as to students.

One final point. Remember, you are also a student. Teachers who stop learning quickly become stale and what they teach can soon become irrelevant. You should read professional journals, join a professional association and attend in-service courses mounted by your TAFE Authority or by those CAEs involved in TAFE teacher education. Details about these courses are circulated to all colleges and they cover an impressive list of topics.

1.3 COURSES

At first you will feel that there is an apparently bewildering range of TAFE courses. Your colleagues may talk about pre-apprenticeship, pre-vocational, post-trade, P.E.P., vocational, apprenticeship, level one to six, stream three, and evening class courses. In many cases, if you are a beginning or part-time teacher, you will not know what these terms mean, especially if an abbreviation or an acronym is used.

From 1985 a new system of course nomenclature was adopted by TAFE across Australia. This system is shown below and should make life simpler for everyone. It is presented here for future reference purposes.

Diploma	Stream 3600
Associated Diploma	Stream 3400/3500
Advanced Certificate	Stream 3300
Certificate	Stream 3100/3200
Endorsement or statement of attainment	Stream 4000
Certificate	Stream 2100/2200
No award	Stream 1000

CLASSIFICATION OF TAFE COURSES BY STREAM

ACTA Title*	Stream	Description
Diploma	3600	Courses at a level higher than para-professional and including courses leading to vocations comparable to those of graduates from UG2 (Diploma) courses in advanced education.
Associate Diploma	3400	Courses covering a breadth of specialised skills leading to employment in para-professional vocations, e.g. in Victoria the current Certificate of Applied Science will become an 'Associate Diploma'.
	3500	Courses providing for specialisation of skills beyond that typical of Stream 3400 and preparing students for para-professional vocations which may involve a variety of specialist functions. No S.A. or Victorian example. Victoria does not expect to offer many such courses.
Advanced Certificate	3300	Courses providing skills at a level beyond trade or trade-equivalent skills, including in some cases supervisory skills, but not providing the level and breadth of specialisation acquired by para-professionals, e.g. Advanced Certificate in Painting, Decorating, Signwriting.

Certificate	3100	Courses preparing students for vocations requiring a level and range of skills less than that normally required for a trade, e.g. Pest and Weed Certificate,
	3200	Courses for recognised trades, courses which provide partial exemption to recognised trade courses and courses at the same skill level for vocations which are not recognised trades, e.g. Painting and Decorating Certificate.
Statement of Attainment	4000	Courses distinguished by entry requirements based on completion of previous studies or equivalent on-the-job experience and deriving from notion or recurrent education. The testamur applying to these courses has yet to be finalised.
Certificate	2100	Courses in basic education and basic employment skills, including pre-vocational and pre-employment courses at a skill level less than trade level, and not granting partial exemption to other courses, e.g. foundation course.
	2200	Courses preparing students for further education, e.g. preparatory science.
No award	1000	Courses for recreation, leisure and personal enrichment, e.g. Greek dancing.

* Title adopted for national registration of TAFE awards by Australian Council on Tertiary Awards.

The old terms will still be used, however, and so the more important of these are briefly described. (These terms, by the way, are not all mutually exclusive.)

Access to education: Accessibility of an education to a student including access to appropriate educational institutions, materials, and personnel.

Apprenticeship: Apprentices are contractually obliged to undertake a trade course at a TAFE college. The employer is responsible for on-the-job training.

Certificate course: Course providing training for technician (middle level) occupations such as supervisors in commerce, industry and government. Normally runs over four years part-time but may be available on full-time basis over a shorter period.

Evening class: Students attend courses after work or as a leisure activity. (Sometimes called adult education or enrichment courses.)

Link course: Course conducted by TAFE in co-operation with secondary schools and designed to provide secondary school students with an introduction to the world of work and an awareness of career and training opportunities.

N.O.W.: New opportunities for women. Programmes designed for adult women who are seeking further education, employment, or greater participation in community activities.

Para-Professional studies: Person engaged in work with professionals in secondary or supplementary capabilities. In general, a person who applies more complex knowledge and skills than a craftsperson but within a more routine or standardised situation and with greater need for direction than a professional.

Participation and Equity Programme (P.E.P.): Courses in TAFE colleges and schools to introduce students to a job and intended for those students who would not normally study after the age of 15 years.

Post-trade: Courses undertaken after obtaining a trade qualification.

Pre-apprenticeship course: The initial segment(s) of a trade course, normally full-time, available to people without an apprenticeship.

Preparatory: These courses prepare students for further education, e.g. certificate entrance, pre-certificate, tutorial mathematics for certificate students, diploma entrance.

Pre-vocational: Courses designed to help people to learn about an occupation so that they can discover their interests and aptitude in that area of work.

Trade: Courses which qualify a person as a tradesperson.

Traineeship: A minimum of one year, with 13 weeks/year being spent 'off-the-job' (usually in TAFE colleges), mostly involving 15-17 year olds.

Vocational: Courses undertaken by people already employed.

A useful publication for TAFE teachers is the Glossary of terms used in TAFE which has been produced by the TAFE National Centre for Research and Development. It covers all terms commonly in use in TAFE.

1.4 STUDENTS

Students are people! Therefore, you will find that they respond well to being treated thoughtfully as people, and respond badly if they are bossed, nagged or made to look foolish. You should especially avoid being sarcastic, a common failing of some teachers. There is more about this in Chapter 6, together with techniques which can be used to break down barriers between members of a group.

There is no such person as a typical TAFE student. Students range in age from teenagers to retired senior citizens. Older students, especially, can bring years of experience to their classes and part of your job as a teacher is to draw upon that knowledge - not to regard it as a challenge to your own authority. Many older people will have had much more experience than you. Do not feel threatened by this but use it as a valuable resource.

Women are now enrolling for courses which traditionally have been courses for men only. Particular care will be needed so that a woman is not made to feel out of place in such courses. The same warning needs to be given about men who enrol in courses which are attended mostly by women. What seems like a joke to you can be deeply offensive to the student. Consider the following example.

> Teacher: Good morning, men! Wait a minute. We've got a female in the group. A girl plumber. It's women who block pipes in homes, fancy having one who'll unblock them.

That is an obvious example of sexism. Less obvious examples are to use 'he' and 'him' when the female is also intended, and to use examples which imply that a task should be done exclusively either by a male or a female.

Migrant students face particular problems, especially if their English is poor. Many colleges now conduct special courses for migrants to improve their English. You should find out about these arrangements at your college.

Handicapped students are now catered for in new colleges. For example, there is wheelchair access and there are toilets for paraplegics. Handicapped people prefer to be treated just like any other student as far as possible. You certainly should not show feelings of 'pity' because that will only embarrass the person concerned.

Sometimes, adolescent students can cause problems of discipline. Until recently, it could be assumed that almost all TAFE students were highly motivated and were attending courses because they wanted to. Such an assumption is no longer valid and so teaching techniques used with mature, employed students, might not be appropriate for unemployed teenagers.

A characteristic of most TAFE colleges is that they are hives of activity from early in the morning until late at night. Some students are full-time, some are part-time. Some are employed and are being paid while attending college, others are unemployed. Some, because they are distance education students, rarely, or never, attend a college.

You can see, then, what a vast range of students attend TAFE colleges. It is not surprising, therefore, that they have a range of motivations, and motivation is the topic of the next section.

1.5 STUDENT MOTIVATION

Motivation is one of those jargon terms which occurs frequently in educational writing. There is a great deal of research into motivation, which indicates that students will be more highly motivated if they can see how the course has relevance to their future employment, if they are 'rewarded' for doing well, and if they feel in control of their own learning.

Obstacles to students' learning include worry, effects of poor teaching, lack of interest (often caused by the apparent irrelevancy of what is being taught) and feeling that the teacher's treatment of them as individuals or as a group is unfair. A sense of humour can go a long way in maintaining good teacher/student relationships.

It has already been pointed out that students vary. Their characteristics, which affect their attitudes and behaviour, include cultural background, sex, intelligence, task aptitude and, most important of all, a unique personality. They will come to your class with a variety of motivations. Your teaching approach can help to increase motivation. Try to find out about your students' work backgrounds. If you teach a general subject, try to relate it to these backgrounds, for example, by visiting the appropriate workshop in your college. Indicate how success in their course can help to improve job prospects, or salaries; and structure the course so that it is not a 'mystery tour' with no known destination.

1.6 USING THIS BOOK

Introductions to books are frequently left unread. However, the preface to this book does contain useful information on how the book is structured and how it may be used. Therefore, if you have not already read the preface, you could find it useful to read it now!

Already, you will have noticed that the book is a mixture of 'theory' and 'practice'. All worthwhile practice must be built on useful theoretical structures and on appropriate research findings. And all theory must be supported by practical examples if it is to be understood and seen to be relevant to the reader's needs. This is what is being attempted in this book.

For example, you might find that you are having difficulty in getting a group of students to work together as a team. There is a great deal of research into how groups work, but just to summarise this using psychological terms would not necessarily be helpful. On the other hand, just to give one specific example of how a teacher dealt with one particular group problem would not necessarily be very helpful, either. What is attempted in this book is a close integration of theory and practice, because they go hand in hand. Therefore, it is not just a 'tips for teachers' book or 'how to do it' manual, and it is not just a theoretical text, although theory is an important component.

It is not intended that you should read the whole book from beginning to end in one sitting. After reading this chapter, read Chapter 2, because the structure of the rest of the book is based upon the teaching process model described in that chapter. Then read other chapters as the need arises, but always turning back to Chapter 2 for a description of the overall process.

1.7 SUMMARY

Teaching is a complex, fascinating profession. TAFE teaching is especially important because it prepares a huge number of students for work, has large adult education enrolments, and at any given time there are more TAFE students enrolled than all other tertiary students combined. There is really no such person as a typical TAFE student.

Teaching should be structured and the main purpose of this book is to present one way of structuring your teaching.

CHAPTER TWO: THE TEACHING PROCESS (W. HALL)

2. PURPOSE OF THIS CHAPTER

Teaching is a most complex job involving long and short term planning, requiring a detailed knowledge of what is to be taught, coping with interpersonal relationships, and knowing how all components of the teaching process affect one another. In addition, TAFE teaching also includes dealing with students ranging from teenagers to old age pensioners, and students vary from those who are studying full time to those who are just attending for an hour or two each week. Further, TAFE teaching is practically oriented and not taught from a textbook.

TAFE teaching is clearly different from both school teaching and teaching in higher education. For many of their courses, TAFE teachers do not have a 'captive' audience. Students will stop attending if they are dissatisfied and employers will make their views known if courses do not meet their requirements.

The purpose of this chapter is to show how the teaching process can be used to deal with the many pressures, such as those just described, which are placed upon the TAFE teacher. A straightforward teaching structure is proposed which draws together all components of the teaching process and which shows how the components are interconnected. Later chapters of the book then develop each of the separate components, in turn. The chapter is divided as follows:

After reading the chapter you should have a better understanding of the complexity of teaching and how different components of teaching interrelate.

2.1 THE TEACHER AS A PROFESSIONAL

Teaching is both an art and a technology. There is some truth in the statement that good teachers are born and not made. Nevertheless, even the artistic part of teaching can be improved upon if some techniques of teaching are known; just as the technological component of teaching would be impossible without any knowledge of the associated techniques.

An effective teacher is an effective manager. Fred Smith's approach to 'managing' illustrates the point:

Fred:	Right then, I'd hoped to cover much more than that, but time has slipped away again.
Member of Class:	But we've not seen the demonstration, and our last class assignment is still unmarked.
Fred:	You're not the only class I've got. Anyway, you can read about the demonstration in the handout.
Member of Class:	Which handout, please?
Fred:	Oh! Didn't I give it to you? That must have been the other group.

Fred is not managing his time and he is not planning his teaching effectively. His class quickly makes adverse judgments about Fred and the teacher/class relationship is destroyed.

Effective teachers know what resources are at their disposal and learn to use them efficiently. The resource centre (sometimes called the library) is one valuable asset. Teaching colleagues are another, and most will be very happy to discuss problems and give advice. Support staff are invaluable colleagues and will be able to offer helpful, practical advice.

One approach to professionalism is to plan effectively within an overall framework. The teaching model discussed later in this chapter will help to achieve this. Comparing teaching with a journey can also be helpful.

2.2 TEACHING COMPARED WITH A JOURNEY

Some teachers like to compare what they are doing with questions they might ask before embarking on a journey. This analogy is shown below, with the corresponding areas of the teaching also being listed.

TABLE 2.1 Teaching compared with a journey

Questions to be answered	Journey requirements	Teaching process
1. Is the journey necessary?	Reason for journey	Identify reason for course
2. Where are we going?	Knowledge of destination	Plan aims
3. What vehicle shall we drive	Vehicle	Collect content
4. What road do we take?	Map	Organise course and lesson content
5. How shall we drive the vehicle?	Driving skills	Determine approaches to teaching
6. What sort of map shall we provide?	Map	Write lesson plan
7. Who are our fellow travellers?	Other traffic	Identify other areas of the curriculum
8. How can we tell whether we are on the right track?	Judgment	Evaluate the course
9. How can we tell if we have arrived?	Judgment	Assess student achievement
10. How do we tell others?	Communication	Disseminate material
11. How can improvements be made?	Critical analysis	Provide feedback

The teaching journey is made much easier if there is a simple theoretical structure which links the main components of teaching. Such a structure is presented in the next section. However, bear in mind that it is not the only possible model. It is just one approach to linking all components of the teaching process.

2.3 A SIMPLE MODEL OF THE TEACHING PROCESS

A popular picture of the teaching process is that shown in Figure 2.1 (The line going to boxes indicated a relationship between the contents of the boxes.)

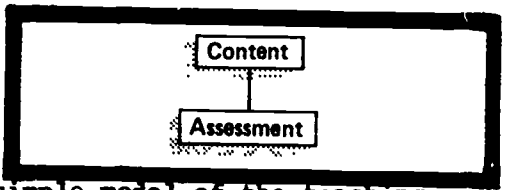

Figure 2.1 A simple model of the teaching process

This model assumes that only two things matter in teaching—the ability of students:

(a) to remember factual material, and

(b) to regurgitate these facts in a examination.

An educated person is regarded as someone who accumulates information, and the important outcome of education is a high mark in an examination which mostly tests recall.

In recent years, there has been a strong movement away from this approach, placing the emphasis on the educational 'process' rather than on content. Frequently, the pendulum has swung too far with the result that content has been regarded as unimportant (even despised) by some educators.

Such an extreme view is possibly even more dangerous than that reflected in Figure 2.1, which at least assumes that the students know something which is assessable. Nevertheless, Figure 2.1 is highly inadequate, even though it does allow two fundamental questions to be asked:

(a) What am I teaching?

(b) How do I know how successful my students have been?

It does not allow two other important questions to be asked:

(c) Why am I teaching this in this particular way?

(d) How should I organise the content of my courses?

The improved teaching model in Figure 2.2 allows for questions like (c) and (d) as well as questions (a) and (b). This improved model shows that content, assessment, organisation of content and ways of teaching are all connected and all influenced by each other.

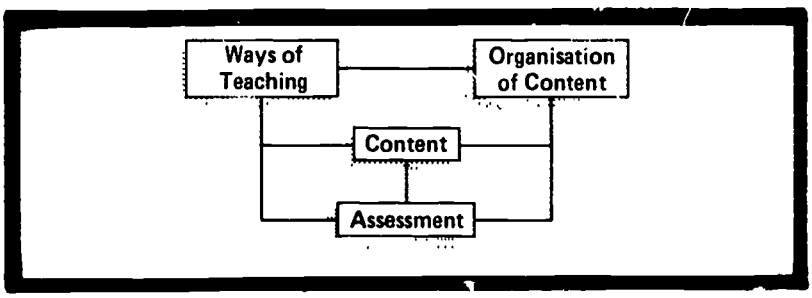

Figure 2.2 An improved model

Although Figure 2.2 is an improvement on Figure 2.1, it neglects further important questions like:

(e) What textbooks and equipment are needed for the course?

(f) Which audio-visual equipment would be useful?

Figure 2.3 is a further development to the model, because it permits the asking of the additional questions (e) and (f).

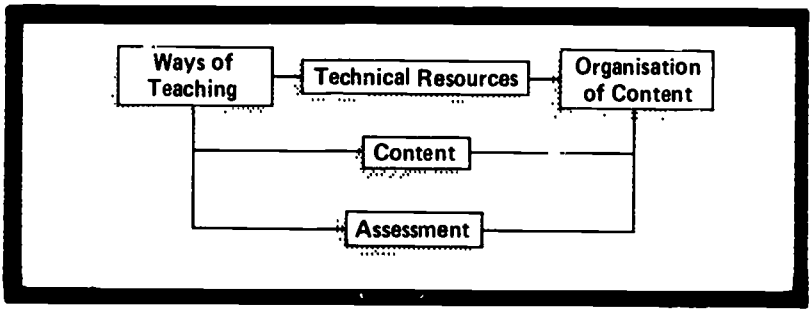

Figure 2.3 A further improvement on the teaching process model

Technical resources take a sensible place in Figure 2.3, not the dominant position which is sometimes assumed for them by audio-visual protagonists! Although a further improvement, the model in Figure 2.3 still does not allow for the following fundamental questions to be asked:

(g) What do I expect my students to be able to do, or to believe, as a result of my course?

2.4 COMPONENTS OF THE TEACHING PROCESS

The answers to this question will influence all components of the teaching curriculum. Frequently, the question is ignored, but to ignore it is like saying 'Don't worry about the ball, let's get on with the game'. The 'ball' is the list of course aims (sometimes called objectives) and the central position occupied by the aims is shown in Figure 2.4.

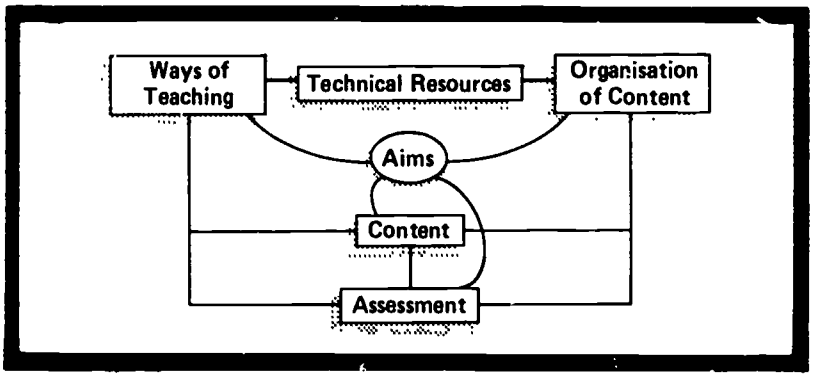

Figure 2.4 A model of the teaching process

Evaluation of any part of the model is possible at every stage of the teaching process. Evaluation should not be left until the end of a course otherwise its important feedback function will not be able to be used. To put it bluntly: evaluation should not be a final seal of respectability.

When evaluating their courses, teachers are actually trying to answer the question:

(h) How successful is my course?

The teaching process model in Figure 2.4 will form the basis for later chapters in this book. Indeed, the book has been structured around the model, as you will see if you look at the list of contents at the beginning of the book.

One weakness of the model is that it seems to have overlooked the student, whose characteristics include sex, intelligence, task aptitude and, most important of all, a unique personality. This is a weakness of 'technological' models such as that shown in Figure 2.4 and so one needs to take these factors into consideration when adopting such an approach.

2.5 USING THE SYLLABUS

The teaching process model shown in Figure 2.4 can be used directly by you to plan lessons from the syllabus. Different syllabuses provide different amounts of detail which is broken down into topics or lessons and teaching points. Nevertheless, you should still be able to plan your lessons for several weeks ahead using the form shown as Table 2.2.

TABLE 2.2 Specimen planning form

Specimen Planning Form — Stage or Class: _____

Subject: _____

Week or date	Lesson topic	Topic aims	Content	Teaching approach	Notes on presentation, ways of teaching	Technical resources required	Assessment	References
1								
2								
3								
4								
5								

An approach similar to this is used by the Sydney CAE Institute of Technical and Adult Teacher Education. Table 2.3 is taken from a form given to their Diploma of Teaching students. In this table, 'Objectives' are listed. These are derived from general course aims, and are frequently written in (what are called) 'behavioural' terms. They are supposed to describe what a student should be able to do or to believe as a consequence of having undertaken that piece of work. (Using the journey analogy described earlier in this chapter, they describe a stage towards the final destination.)

To achieve general course aims, specific objectives must be achieved for each lesson or topic. Sometimes, objectives are classified as:

knowledge objectives
skill objectives
attitudinal objectives.

Other classifications exist and numerous detailed texts are available which describe them. The next chapter gives further information about objectives. However, in this book, aims are general statements, objectives are specific and are usually expressed as changes in behaviour.

TABLE 2.3 Guide notes for use of programme form

Week or date	Lesson topic	Topic objectives	Content to be treated	Method	Notes on presentation exercises, tests and home assignments	Aids	Refer-ences
Teacher needs to consider time-budgeting	Whether or not Lesson-by-lesson syllabuses are provided by the School a Teacher needs to develop the capacity to SELECT, DIVIDE and DEVELOP a topic	Write in terms of expected student behaviour	A teacher needs to be able to SELECT THE 'MUST KNOWS' and the likely DIFFICULTIES in the lesson 'Breakdown'. - Show outline of scope and breakdown	Describe the METHOD or features of approach which are best suited to teaching the topic and its main points	Outline the exer-cises, home assign-ments or tests needed to develop adequate mastery by the student on the one hand and knowledge of student progress by the Teacher on the other	List aids necessary and available to teach particular lesson	List refer-ences in textbooks or journals which should be given to students to help them learn the material

Notes on programming:

In practice experienced teachers might not undertake such detailed advance planning but in general they do plan ahead. This has obvious merit in time-budgeting, unity and continuity in lesson sequence and more effective learning by students. The exercise here is to give the teacher experience in fairly thorough planning.

Typical of the syllabuses you will have to work from is the example shown below (from the National Core Curriculum for Secretarial and Administrative Studies).

No.	Objectives	Suggested Content
4.6.1	THE STUDENT SHOULD BE ABLE TO	
	select and use appropriate reference sources	General and technical dictionaries, postal guides, directories, atlas, price lists, catalogues, instruction manuals
	GIVEN	
	request for information	
	SO THAT	Texts, newspapers, trade journals, etc.
	the required information is provided efficiently	Airline timetables, railway timetables, accommodation guides.

Syllabuses are not meant to be 'strait-jackets', allowing no room for individual teachers to manoeuvre, or preventing them from using initiative, or stopping them from making a course reflect their own interests and personality. How a topic is taught, the examples which will be used, what technical aids are to be employed, and (quite frequently) the assessment procedures to be applied, are all decisions you will have to take. Clearly, these decisions will be taken after you have held discussions with other colleagues who are involved in teaching the subject and after reaching agreement with the head of the department (or school) concerned. The specific steps in lesson planning are treated in detail in Chapter 4.

2.6 SUMMARY

Teaching is a complex, time-consuming activity. A professional approach to teaching demands the making of careful plans to ensure that course aims are achieved by students. Course aims are linked to every area of the curriculum:

- content
- the way content is organised
- approaches to teaching
- technical resources
- student assessment.

The components of the simple teaching process model described in this chapter are developed throughout the book, and their links with other components are described.

CHAPTER THREE: WRITING AND USING AIMS AND OBJECTIVES (G. BENNETT & A. WATSON)

3. PURPOSE OF THIS CHAPTER

The general purpose of all education and training is to modify or change students' behaviour (or performance) in some way. In some instances this modification or change may involve the acquisition of new knowledge or skills. In others, it may involve the acquisition of work habits or changes in attitudes. The purpose (or destination) of a course is identified in the aims of that course.

A teaching aim can be thought of as a general statement describing what a student is expected to achieve as a result of a course of study or unit of instruction. These aims often serve as starting points for teaching and should be carefully thought out by teachers before they decide upon their teaching and assessment procedures. Specific objectives can be derived from the more general aims.

Many teachers, however, are unclear as to the precise nature and purpose of aims in teaching. Many teachers, also, are uncertain about the specific objectives of the particular course which they are teaching and about the best way of stating objectives so that they may serve as useful starting points for instruction. The purpose of this chapter is to assist teachers in relation to these problems.

The chapter is divided as follows:

After reading the chapter you should be able to describe the nature and main types of instructional objectives; list and classify the broad aims or general objectives of the course you teach; describe the qualities of a good instructional objective; write instructional objectives; and, explain the importance of objectives in teaching.

3.1 DEFINING INSTRUCTIONAL OBJECTIVES

It was pointed out above that the general purpose of education and training is to modify or change the behaviour of students in some way. It follows that instructional objectives should identify as precisely as possible what these anticipated changes or modifications in the students' behaviour will be. In simple terms, instructional objectives describe what students should know or be able to do following instruction. For example:

a) students will, on completion of a course in optics, be capable of producing various types of spectacles according to the requirements of the prescription and the appropriate standard specifications;

b) students will, on completion of a lesson in fitting and turning, be able to machine a number two morse taper on a lathe to + .02mm on large diameter.

Objectives, such as these, may constitute effective targets or starting points for instruction. They must be clearly understood by teachers before teaching procedures and learning activities can be properly selected and before the success of these procedures and activities can be properly assessed. This is true, moreover, in relation to all courses of study, individual subjects, instructional units and lessons which a teacher is called upon to teach.

3.2 TYPES OF INSTRUCTIONAL OBJECTIVES

The first examples of objectives given in this chapter indicate that instructional objectives may be broad or general, describing a whole range of behaviours (or performance), or more specific, describing single instances of behaviour (or performance).

Broad or general instructional objectives describe, in very general terms, the behaviour expected of students following completion of a curriculum, subject or sizeable unit of study. They are often referred to as course aims (as in this book) and should be found at the beginning of the course or subject syllabus. For example:

a) students will, upon completion of the course, be proficient in the production of letters, reports, tables, documents, forms and manuscripts;

b) students will, upon completion of the course, demonstrate good safety habits, punctuality and pride in their work.

Specific instructional objectives describe, in more precise and explicit terms, the behaviour expected of students on completion of smaller units of study such as syllabus units and single lessons. These are sometimes referred to as lesson objectives or performance goals. They often do not appear in the syllabus and generally have to be inferred by the individual teacher from course aims and syllabus content. The teacher then writes up these lesson objectives or performance goals in what are known as 'behavioural terms'. For example:

a) students will, on completion of the lesson, be able to name, describe and correctly set out the basic parts of a business letter;

b) students will, on completion of the lesson, be able to disassemble a standard three-speed synchromesh transmission in accordance with manufacturer's procedure using the proper tools.

3.3 OBJECTIVES IN TECHNICAL AND FURTHER EDUCATION

Departments of Technical and Further Education offer a very wide variety and range of courses. These include vocational, general and recreational courses. The vocational courses have typically ranged from those providing education at the diploma level to those offering education and training at the technician and trade levels. More recently they have included a range of short special purpose courses for special populations. Consequently, a very wide range and variety of instructional objectives are represented.

Sometimes, however, syllabuses for TAFE courses appear without adequate descriptions of course objectives and teachers may simply have lists of topics, tasks, assignments, etc. to guide them. Under these circumstances, teachers may be quite unclear about the objectives of the course they are teaching and they may conceive the objectives of the course and its component parts too narrowly. In addition, teachers may have difficulty in translating broad or general objectives into specific objectives for lessons and other instructional units.

How then are teachers to gain a clear and comprehensive picture of the objectives of the course they are teaching?

Most types of educational endeavour have objectives of three main types:

- Objectives in the knowledge area

  Objectives relating to the acquisition of knowledge and cognitive skills such as understanding, problem-solving, analysis, judgment, etc.

- Objectives in the skills area

  Objectives relating to the acquisition of psychomotor or manual skills and the performance of jobs, operations, etc.

- Objectives in the attitudinal area

  Objectives relating to the acquisition of attitudes, work habits, etc.

Most courses in Technical and Further Education can be seen to involve objectives of these three types.

For example, a course which has as its general or overall aim the development of an efficient secretary can be seen to involve objectives such as the following:

- the acquisition of knowledge concerning letter forms, office procedures, shorthand rules and principles;

- the development of basic shorthand, typing and general office skills;

- the development of conscientious and responsible attitudes and work habits.

The usefulness of such an analysis is that it gives teachers a much clearer and more comprehensive picture of the general objectives of the courses they are teaching and prevents them from conceiving of these objectives too narrowly.

The education of a mechanic, a stenographer or an accountant is after all dangerously incomplete unless it has, as one of its objectives, the development of a sense of responsibility towards his/her employer or client. A course in history is very barren if the teacher conceives of the main objective as the inculcation of facts at the expense of the fostering of such intellectual skills as understanding, analysis and critical judgment.

The overall aims as previously analysed/outlined will assist teachers also to understand the interrelationships between the general course objectives and the various subjects, stages, units, topics and other component parts of their syllabus. It will make them better able to translate the general objectives of their syllabus into specific objectives, teaching procedures, tasks and tests for the various component parts. When general objectives are not described and classified in this way in the syllabus it is important that teachers carry out the analysis for themselves.

3.4 THE QUALITIES OF A GOOD INSTRUCTIONAL OBJECTIVE

It has already been pointed out that instructional objectives occupy a central position in the teaching process. In planning teaching procedures and learning activities for a particular course, lesson or instructional unit, teachers must consider what they are trying to achieve in that course, lesson or instructional unit. That is, the teacher needs to answer the fundamental question posed in Chapter 2: 'What do I expect my students to be able to do or to believe as a result of my course or lesson?'.

If objectives are to be useful they must be expressed in terms which are helpful to the teacher in the selection of lesson content and teaching-learning procedures.

There are a number of ways in which instructional objectives may be stated. In broad terms one can distinguish between teaching objectives and learning objectives. Teaching objectives refer to the activities of the teacher and indicate what the teacher is expecting to achieve in the lesson. These teaching objectives may be written in terms of tasks or subject matter to be covered. For example:

- the aim of this course is to teach students the major concepts of science;
- the objective of this lesson is to lead students to an understanding of the basic micrometer.

Teaching objectives may also be written in terms of what the teacher has to do. For example:

- during this unit, the teacher will analyse the causes of metal corrosion in motor vehicles;
- during this lesson, the teacher will demonstrate the construction of a secret-mitre dovetail joint.

A more useful way to state instructional objectives, however, is to describe the anticipated learning outcomes that students are to achieve as a consequence of instruction. These statements identify for the teacher how students should perform, what they should know or be able to do, following instruction. Consider the following examples:

- students will, on completion of the course, be capable of preparing tender bids and quotations for all types of hydraulic service contracts;

- students will, on completion of the lesson, be able to describe the operational principles of the basic micrometer and identify and name its component parts;

- students will, on completion of the lesson, be able to set up and perform a straight turning operation on mild steel using an engine lathe with + .05mm tolerance.

These statements describe anticipated learning outcomes in behavioural terms. That is in terms of student performance. They identify clearly in relation to the course or the lesson the content or tasks to be taught (what students should know) and the behaviour (what students should do) in relation to that content or those tasks.

There are many advantages to the teacher and student in stating instructional objectives in learner terms, i.e. in anticipating outcomes in terms of student performance in this way:

- the teacher is better able to select subject matter and tasks appropriate to the objective;

- the teacher is better able to select appropriate teaching procedures and learning experiences to achieve the objective;

- the teacher is better able to select tests and assessment procedures capable of determining whether the objective has been achieved;

- students are better placed to select what to learn and to participate in their own instruction.

If instructional objectives are to serve as useful starting points for instruction then they should be stated in such a way that they clearly indicate what learners should know, and be able to do or believe, following instruction. Whether the objective is a general or course objective or whether it is a specific or lesson objective, it should be stated in terms which clearly describe what the student is expected to achieve as a result of a course of study or a specific lesson.

When writing instructional objectives in terms of the learner teachers may find it useful to use the following terms:

For general objectives:

know	develop
acquire	analyse
understand	demonstrate
apply	formulate
appreciate	perform

For specific objectives: (precise behaviours which demonstrate the achievement of general objectives)

define	correct	draw
describe	remedy	modify
list	locate	test
name	set up	calibrate
identify	design	install
explain	determine	replace
recognise	repair	operate

The identification and clarification of instructional objectives is an essential step in the preparation of individual lessons. In identifying and writing instructional objectives teachers might consider such resources as the subject matter content of the lesson, the course syllabus, appropriate reference books and journals, colleagues and previous examination papers.

Note: The planning of individual lessons will be considered in the next chapter.

3.5 THE IMPORTANCE OF OBJECTIVES IN TEACHING

The importance of instructional objectives for classroom teaching may be illustrated by reference to the model of the teaching process introduced in Chapter 2. According to this model, teaching is seen as a process involving the consideration of a number of factors - subject matter (content); the organisation of that content; ways of teaching; technical resources; and student assessment. Instructional objectives are linked to all of these components of the process and all components of the model must be seen as related and interdependent. For instance, the kinds of teaching procedures and learning activities employed depend on the kinds of student behaviour which the objectives state are to be initiated and developed. If, for example, the aims of a course and subsequent lessons include the development of a psychomotor skill such as typing, then objectives and teaching procedures which involve demonstration, drill and practice should be employed. If, on the other hand, the aims of a course and subsequent lessons include the mastery and understanding of factual information and concepts then objectives and teaching procedures should be selected which serve to explain and illustrate these concepts, and questions, exercises, etc. will have to be designed which test the students' understanding of them.

If the aims require the development of independence and attitudes of self-reliance, methods which incorporate self-directed and open learning may be employed.

Consequently, the chief implication for teachers is that it is fundamental to identify and clarify the objectives of the instructional unit to be taught. Before teachers can begin to devise or select teaching procedures and learning activities for a course or lesson and suitable questions, exercises, etc., for the related test, they must first of all understand what they are endeavouring to achieve through that course or lesson.

3.6 SUMMARY

Instructional objectives can be thought of as statements which describe what students are expected to achieve following instruction. They may be generalised statements (called 'aims') referring to a broad range of behaviours or precise statements referring to a specific instance of behaviour.

Most courses in Technical and Further Education can be seen to have aims which involve the following:

- the acquisition of knowledge;
- the development of practical skills;
- the fostering of attitudes towards work.

An essential step in the teaching process is to identify and clarify the instructional objectives of the course, lesson or instructional unit.

If instructional objectives are to be useful they must be expressed clearly in terms which are helpful to the teacher in the selection of lesson content and teaching-learning procedures.

Instructional objectives are important because they determine:

- what is to be taught;
- how it is to be taught;
- what is to be assessed;
- how it is to be assessed;
- what the course content should be;
- how content should be organised;

This was shown in the teaching process model described in Chapter 2.

REFERENCE

Thomson, P. (1986). Student assessment: a handbook for TAFE teachers. Melbourne: Nelson-Wadsworth.

CHAPTER FOUR: PLANNING TEACHING (A. WATSON)

4. PURPOSE OF THIS CHAPTER

In Chapter 2 you were introduced to the central importance of aims in the teaching process. It was suggested that one of the most important aspects of teaching was to clarify the aims of the course or course unit to be taught. That is, before teachers can begin to plan such things as methods of teaching, how best to use technical resources, the organisation of lesson content, etc., they must ask the question: 'What do I expect my students to be able to do, or to believe, as a result of my course'.

In this way, aims help to determine:

- what is to be taught
- how it is to be taught
- what is to be assessed
- how it is to be assessed.

Once the aims of the course are known and the objectives of the course unit are clear, teachers are then in a position to prepare and present their lessons.

In Chapter 3 you were introduced to the process of writing and using instructional objectives. This chapter deals with the broader process of planning effective lessons.

There are of course many factors which contribute to the success or failure of a lesson. The confidence of a teacher, the command of the subject, the clarity of exposition, the suitability of aids and illustrations used and the ways in which interest is aroused and maintained are examples of only some of these. All of these factors, so important for successful teaching, can only be managed properly and will only contribute effectively to the success of a lesson as a result of thorough and proper lesson planning. It is for this reason that it has often been said that the most important aspect of all teaching is the preparation which goes on before teaching commences.

A well known politician once illustrated this point when asked how long it took him to prepare a speech. In his reply the politician maintained that if there was no time limit he didn't need to prepare at all but as the time limit for his speech decreased there was a corresponding increase in the time that he would need for preparation. In other words, the shorter the time available for a speech, the more important it became to choose every word and gesture carefully to achieve maximum impact. This is also true of teaching, when it is important that the teacher makes time count, by preparing lessons carefully.

There are many approaches which teachers may adopt in preparing lessons. Furthermore, different teachers may do different things in different ways and in a different order. Nevertheless, there are at least five measures which are absolutely fundamental to all effective lesson planning. These may be thought of as the five basic steps in lesson preparation, and are set out as follows:

It is of course necessary to include some evaluation of the effectiveness of the lesson. This is considered in the lesson plan.

After reading the chapter you should be able to describe each step and prepare a lesson plan using the format suggested.

You are reminded however that these steps do not necessarily occur in any strict order. They are set out in this way for ease of reference and understanding and for purposes of explanation and clarification.

4.1 ESTABLISH THE OBJECTIVES OF THE LESSON

It needs to be restated here, that one of the most fundamental tasks in all teaching is to analyse and clarify the aims of the course or unit to be taught. Having done that, the first step in the preparation of any lesson, is to decide upon and write down the specific objectives for that lesson.

If these objectives are to be useful starting points for instruction, it will be recalled that they should describe what learners should know and be able to do, or to believe, following instruction.

If, for instance, the lesson involves the learning of theoretical subject matter, the lesson objectives should identify clearly the scope of the subject matter to be learned and what students should be able to do in relation to that subject matter. For example:

> Students will, upon completion of the lesson be able to do the following:
>
> - explain the operating principles of a basic micrometer
> - identify, describe and explain the function of the component parts
> - take readings correct to within 0.01mm.

If, on the other hand, the lesson is of a more practical nature, involving the development of psychomotor or practical skills in the performance of a particular job or operation, the lesson objectives should identify the job or operation to be performed and the standard of skill required in relation to it. For example:

> Students will, on completion of the lesson, be able to set up and perform a straight turning operation on mild steel using an engine lathe with ± .01mm tolerance.

Figure 4.1 Operating a lathe

Lesson objectives are often not able to be stated as precisely as this though, when they deal with such matters as attitudes, values, the development of appreciation, and changes in interest. These objectives should still be stated however as concisely as possible. For example:

> Students will develop attitudes of safety and responsible work habits.

Lesson objectives are rarely stated in the course syllabus. They can usually be inferred from syllabus content and course aims.

For example, the general aim of a course in Trade Calculations might be as follows:

> To develop in students a knowledge and understanding of those mathematical processes relevant to their trade and to further their skill in the application of these.

The specific objective of a single lesson in that course therefore could be stated as follows:

> To develop understanding of a particular mathematical process and to develop skill in the solving of particular examples.

This is why it is important to clarify general course aims before preparing individual lessons and individual lesson objectives. Other ways to clarify aims are to consult senior teachers and previous examination papers.

4.2 RESEARCH THE MATERIAL FOR THE LESSON

As the objectives of a particular lesson are being established, a teacher must also carry out the necessary research and reading in relation to those objectives.

This is because teachers must be thoroughly familiar with the subject matter and skills to be taught if they are to teach them well. Lack of knowledge or skill on the part of the teacher is quickly sensed by students and may elicit awkward questions which could lead the teacher to resort to bluffing, or induce a feeling of insecurity.

First of all, then, teachers should make themselves thoroughly conversant with the syllabus and its requirements. Then they should bring their knowledge and skills up-to-date through reading the relevant texts, journals, etc., and by practising the job or operation to be taught.

Discussion of the topic with more experienced teachers and consideration of past examination papers may again assist at this point.

4.3 SELECT THE METHOD OF TEACHING

Once objectives have been clarified and preliminary research completed, a teacher is then in a position to select the method of teaching to be employed.

If the purpose of the lesson is to lead students to an initial awareness or understanding of certain theoretical subject matter (factual information, concepts, principles, relationships, etc.) then formal oral instruction, perhaps with the use of videos might be employed.

If, on the other hand, the objective of the lesson is to develop a more thorough understanding of such subject matter or if it is to develop certain cognitive skills in operating with this subject matter (as in shorthand, mathematics and bookkeeping for example), then a modified approach to formal oral instruction known as the modified lecture, or small group methods, might be employed. Such an approach would necessitate some modification of the teacher's exposition through the inclusion of regular questions, discussion and student activities.

If the objectives of the lesson include the development of basic psychomotor or manual skills, however, (as in typing, machine shop, practical welding, and so on), then teaching procedures which involve demonstration, drill and practice should be employed.

If the objectives of the lesson include the development of independent work habits and attitudes of self-reliance then self-directed learning or discovery modes might be employed.

A wide range of teaching approaches is now used in TAFE colleges, including computer assisted learning, mixtures of off-campus and on-campus studies (multi-mode), individualised instruction and different approaches to practical work. Some of these are described in later chapters.

Figure 4.2 A modern learning environment

4.4 WRITE THE LESSON PLAN

Once the method of teaching has been decided upon, the teacher is then in a position to write the detailed lesson plan.

There are at least two good reasons why a teacher should write a lesson plan. The first is that it forces the teacher to think through the material and procedures of the lesson before the lesson begins. The second is that the plan serves as a guide, to keep teachers on the track, as the lesson proceeds.

The content and format of the lesson plan will, of course, vary from lesson to lesson depending on the particular lesson objectives and on the type of general teaching procedure employed. In addition, the form of lesson plan preferred should be the one which the teacher finds most useful and confidence-boosting in front of a class. Nevertheless, a number of basic principles and procedures can be identified which underlie most effective lesson plans and these should provide the basis for lesson planning in most situations.

The first of these is that lesson plans can be made generally more effective if they are divided into three major segments or phases. These are: (a) The introduction; (b) The body of the lesson; and (c) The conclusion. In other words you have to be prepared to 'tell them what you are going to tell them; tell them; and tell them what you have told them'. Principles and procedures relating to each of these phases will be dealt with in turn.

a) The introduction

('Tell them what you are going to tell them')

The purpose of an introductory step in most lessons is to prepare students for what they are about to learn and to ensure that they are ready for and interested in the subject matter or skill to be learned. The introduction should set the scene for the lesson to follow. It should capture students' attention and then focus this attention on what is to be learned.

A well planned introduction, therefore, should incorporate the following features:

- revision of previously learned and related subject matter or skills;
- explanation or illustration of the importance of and need for the subject matter or skill to be learned;
- overview of the aim and scope of the new lesson.

Revision of previous work can be carried out by means of some form of quiz or question session in which ALL students participate. A pre-test can be used for individualised instruction. The need for the new subject matter or skill may arise from this quiz. Alternatively, students may be motivated by means of anecdotes, pictures or examples which demonstrate the importance of the concept or operation to be taught in the performance of a particular job or occupation. In addition, interest may be aroused by visual aids, demonstrations and displays of finished work.

b) The body of the lesson

('Then tell them')

The body of the lesson contains the major steps of the lesson. Each of these steps should set out clearly two aspects.

- The material (subject matter or operations) to be taught in the step
- The specific teaching procedures to be employed in that step.

If the lesson involves the presentation of theoretical subject matter (facts, principles, concepts, relationships, etc.) by means of formal oral instruction (lecture or modified lecture), the body of the lesson plan should set out clearly the subject matter to be taught. For ease of presentation and student learning this subject matter should be meaningfully organised in major sections or segments which constitute the major steps of the lesson. Each step should consist of a heading under which is set out in point form the material relating to that heading. The material in each step may be further subdivided into sections with points of detail listed for each section.

If the lesson is a practical lesson involving demonstration and practice in relation to a particular job or operation, the body of the lesson plan should set out the steps or operations to be demonstrated as well as those to be practised by students. These steps or operations then constitute the major steps of the lesson.

In addition, each step of a lesson should make reference to the specific teaching procedures to be employed in that step. This would include those visual aids, examples, illustrations, key teaching points, questions, student activities, etc., to be used in each step to ensure student learning and understanding of the material and/or operations to be taught in that step.

To ensure that both aspects of each lesson step are planned properly it is usually necessary to adopt a two column format in setting out the body or main steps of a lesson. The following formats are strongly recommended.

Example 1: Lesson plan format for formal oral instruction

(The lecture and modified lecture)

Material to be taught	**Teaching procedures**
Set out here the subject matter to be taught. The material should be subdivided into major steps or segments. Each step should be numbered and have a heading. Material in each step should be listed in point form.	Set out here, in detail, the visual aids, examples, illustrations, questions and exercises to be used to teach or test the material in each of the steps in the first column.

Example 2: Lesson plan format for a practical lesson

(Demonstration and practice)

Operations to be performed	**Teaching points**
(What students must do)	(What students must know)
Set out here the major steps operations to be demonstrated by the teacher and performed by the students.	Set out here the key points or which students must know to successfully perform the operations in the first column. These are the points to be emphasised by the teacher during the demonstration. They might include points on technique, safety precautions, related theory and calculations, drawings, common problems, etc.

(Full lesson plans for both types of lesson are provided in Examples A and B following the references at the end of this chapter)

Note: The body of the lesson is NOT a lesson step. It contains all the major steps of the lesson excluding the introduction and conclusion.

c) **The conclusion**

('Now tell them what you have told them')

The purpose of a concluding step in most lessons is to summarise and review the major points or aspects of the lesson. It provides an opportunity for teachers to re-emphasise important concepts and operations. The conclusion, moreover, is often the last opportunity to check whether concepts and operations have been properly understood before they are put into practice. It may also provide an opportunity for teachers to establish a link with related work to follow.

A well-planned conclusion, therefore, should incorporate the following features:

- review and summary of important aspects of the lesson;
- preview of related work to follow;
- some form of assessment to check whether objectives of the lesson have been achieved. This could take the form of a written quiz or submission of completed work. (Methods of assessment are treated in full in Chapter 14.)

Before moving on to the final aspect of lesson preparation to be discussed, it should be re-emphasised that the main reason for organising the material and teaching procedures in the manner suggested is to maximise student learning. With this in mind, brief mention should be made of two further points or general rules about student learning which relate to formal oral instruction.

The first of these is that lesson plans for formal oral instruction should, where possible, be limited to from five to seven major segments or steps of material. Each step ideally should contain from five to seven points. This is because students generally find that lists of verbal material become difficult to learn when they contain more than seven elements.

The second is that students often find verbal material easier to learn if it is organised in some hierarchical structure. For this reason, it is often effective in oral instruction to present general, all inclusive concepts first, before moving on to less inclusive sub-concepts, then examples, instances and details.

(Note: These and other general principles about the organisation of content will be treated in more detail in the next chapter.)

4.5 PREPARE AIDS AND RESOURCES

Once the details of the lesson plan are established, the teacher is then in a position to construct and prepare the various aids, props, supplementary materials, and other resources required by the plan and not prepared during the course of writing the plan.

This would include such visual aids as overhead transparencies, charts, models, slides, movie films, videos and samples of finished work. Special rooms, screens and projectors may also have to be secured and prepared.

Any exercises, assignments, handouts and self-paced learning materials required to supplement the lesson should also be prepared at this stage together with chalkboard outlines and diagrams.

(Note: The preparation and use of visual aids, and other resources will be treated in detail in Chapter 12.)

In conclusion it should be pointed out again that the steps set out in this unit are suggested rather than prescriptive. Other measures may be taken in addition to those set out here, and certain steps, such as the clarification of lesson objectives and research and selection of lesson content, may be carried out in a different order or simultaneously.

4.6 SUMMARY

The key to successful teaching is effective planning. It has been said that the most important aspect of all teaching is the preparation which takes place before teaching begins.

There are five procedures which are absolutely fundamental to effective lesson planning. These five basic steps in lesson preparation are as follows:

- establish the objectives of the lesson
- research the material for the lesson
- select the method of teaching
- write the lesson plan
- prepare aids and resources.

More effective teaching and learning will be the outcome if these five steps are properly taken into account before the teacher enters the classroom.

REFERENCES AND FURTHER READING

Mills, N. R. (1972). Teaching and training: A handbook for instructors. (2nd ed.), (Ch. 2). London: Macmillan.

Miller, W. R., & Rose, H. C. (1975). Instructors and their jobs. (Ch. 5). Chicago, Ill.: American Technical Society.

Stephens, M. D., & Roderick, J. W. (1974). Teaching techniques in adult education. (Ch. 4). London: David and Charles.

EXAMPLE LESSON PLANS*

EXAMPLE A: LESSON PLAN FOR FORMAL ORAL INSTRUCTION

SUBJECT: Corrosion in the Motor Vehicle **CLASS:** . . . .

LESSON TYPE: Modified Lecture **TIME:** . . . . .

TEACHER:

Objectives

On the completion of the lesson students will be able to:

1. Identify causes of rust in a motor vehicle.
2. Employ two methods of rust prevention in construction.
3. Identify and list four major treatments in rust prevention.
4. Correct rust areas in a motor vehicle.

Preparation

1. Prepared panels showing samples of rust and prevention.
2. Rust preventives in samples.
3. Overhead transparencies of rust in a motor vehicle.

Material to be taught	Teaching procedures
Step No. 1: Introduction	
a) Review of previous lesson and stress relevance to today's lesson. b) Statement of aims and scope c) Stress need for rust prevention.	a) Revision Quiz b) Teacher/Student discussion: importance of rust prevention: cost and prevalence of rust damage.

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* Example lesson plans are adapted from actual lesson plans prepared by students at the Institute of Technical and Adult Teacher Education, Sydney CAE.

Step No. 2: Causes of rust

a) Unprotected metal b) Moisture c) Dirt d) Poor design	a) Examples of rust in metal shown and discussed. b) Questions Why does moisture cause rust? Other causes of rust? c) Chalkboard summary of main causes.

Step No. 3: Prevention of rust

Two methods

a) Before rust starts e.g. Good design Correct Workmanship b) Metal Surface Conditioner e.g. 1 Phosphate coating 2 Fish oil	a) Overhead transparencies of rust in body displayed. Teacher points our section on poor design in vehicle. b) Aids displayed on phosphate coating and fish oil treatment. c) Teacher/Student discussion: best methods of rust prevention.

Step No. 4: Treatments of metal

& prevention of corrosion

1. ANODISING e.g. Prevention of corrosion of aluminium 2. CADMIUM PLATING e.g. Anti-rust treatment for nuts and bolts 3. GALVANIZING e.g. A hot dip treatment for inside frames 4. ELECTROPLATING e.g. Hard long-lasting finish to improve appearance of vehicle.	a) Questions Who knows a method of rust prevention? Describe a method seen. b) Examples of treatments for rust prevention - explain and show c) Teacher/Student discussion on use of treatment in their places of employment. d) Chalkboard Summary: Main methods of metal treatment.

Step No. 5: Correction of rust areas

a) ADVANCED RUST 1 Total removal and replacement. 2 Do not fill rust section with plastic filler. b) SURFACE RUST 1 Remove surface rust. 2 Treat area with metal conditioner. 3 Paint surface. 4 Fish oil box sections.	a) Examples of advanced rust shown. b) Questions How would you treat samples shown? c) Stress dangers of filling rust with plastic filler. d) Example of surface rust shown. Teacher/Student discussion on correction of affected areas. e) Chalkboard summary: main points on rust correction.

Step No. 6: Conclusion

1. Review lesson from chalkboard. Main points a Causes of Rust b Prevention of Rust c Treatment of Metals d Correction of Rust 2. Stress again need for rust prevention.	1. Oral questioning of students, to determine whether aims of the lesson have been achieved. 2. Examples used in lesson will be used to aid in Review of Lesson.

EXAMPLE B: LESSON PLAN FOR A PRACTICAL LESSON

SUBJECT: Typewriting **CLASS:** . . . .

TOPIC: Tabulation **TEACHER:** . . . . . .

LESSON TYPE: Demonstration - Practice **TIME:** . . . .

Objectives

Students will:

1. Identify and name the basic parts of a table;
2. Describe the basic steps in the preparation of a table;
3. Develop manipulative skills on parts of the machine used in the production of a table; e.g. back space-key, tabulator, space bar.

Aids

1. Demonstration model typewriter, preferably on platform providing a clear side view to all students.
2. Overhead projector transparency identifying the basic parts of a table.

Introduction

One of the more challenging kinds of work in the office is that of typing data in column form. Known as tabulation, this kind of typing requires more thought and judgment than do other tasks and so is a welcome break from other routine kinds of work.

Show transparency and enumerate the main points.

1. The title
2. Subtitle
3. Column headings
4. Body
5. Column.

BODY

Operations	Teaching Points
1. Clear the machine.	Demonstrate use of tab clear key. Move margin stops to ends of the carriage. Using the tab key, prove that the carriage is clear. Emphasise that the paper is not inserted until all the planning is done and the machine is completely adjusted.
2. Select the 'keyline'.	Explain the method. It consists of counting six blank spaces between columns, plus the longest item in each column. Guide the students in computing the 'keyline' from other text book examples.
3. Set left-hand margin stop.	Demonstrate. From the middle of paper back-space to centre the 'keyline'. Set the stop at this point.

		Check that students all reach the same point on the scale, assuming all are using same centre point.
4.	Set table stops.	Demonstrate using the space bar to move across the paper to set a table stop at the start of each column. Check that the key has been pressed firmly by asking the students to call the points at which their carriage stops on a trial run.
5.	Compute top margin and insert paper.	Explain how to figure the top margin necessary to centre the table vertically. Demonstrate inserting the paper to starting line and centring the carriage.

Student activity

Students practise typing the table. 1. Backspace centre the title use capitals. 2. Drop down three lines and type body.	Teacher supervises student performance. Checking for errors.

Conclusion

1. Review—when you stop to analyse how a table is produced, you will see that it is mostly a matter of centering. You pick out the longest item in each column then back up from the middle of the paper enough to centre all those items and to leave six blank spaces between them. You set tab stops to make it quick and easy to line up the items in each column.

2. Collect papers and discuss marks awarded.

CHAPTER FIVE: ORGANISING CONTENT (R. PITHERS)

5. PURPOSE OF THIS CHAPTER

One of the most important and challenging parts of lesson preparation is deciding and organising what to teach to a group of students. All of the techniques of effective lesson presentation that help to guarantee an attentive, motivated group of learners will be misdirected unless the teacher has clearly determined the appropriate content to be taught and how to organise that content. The content may be theoretical and verbal, a practical skill or involve both of these aspects, and should flow out of whatever course objectives have been predetermined. The content for a single lesson, however, will only be a part of the total content required for a complete unit of work.

In this chapter, advice on organising content is given. The chapter is divided as follows:

5.1 A UNIT OF WORK

A unit of work is a part of the total course of study. It may be a particular subject topic or skill area or a group of topics with the relevant organisation of objectives, learning activities and teaching aids. The unit of work is usually not presented to the class in one session but is broken up into a series of related lessons. For example, Stage 1 of an Automotive mechanics course (light vehicles), might last for one year but be broken up into several units of work. Unit I might be called Automotive Technology, Unit II - Basic Skills and Knowledge, Unit III - Engines, and so on. Each of these units of work can be further broken down into a series of specific content selected areas suitable for presentation to the students in a lesson. In terms of the unit of work 'Automotive Technology' it may be decided that separate lessons on the following topics are required:

- The design of body frames
- Controlled energy absorption for safety
- Corrosion in motor vehicles.

Figure 5.1 shows a schematic representation of the relationship between the course of study, units of work and lessons for a particular level of an automotive mechanics course.

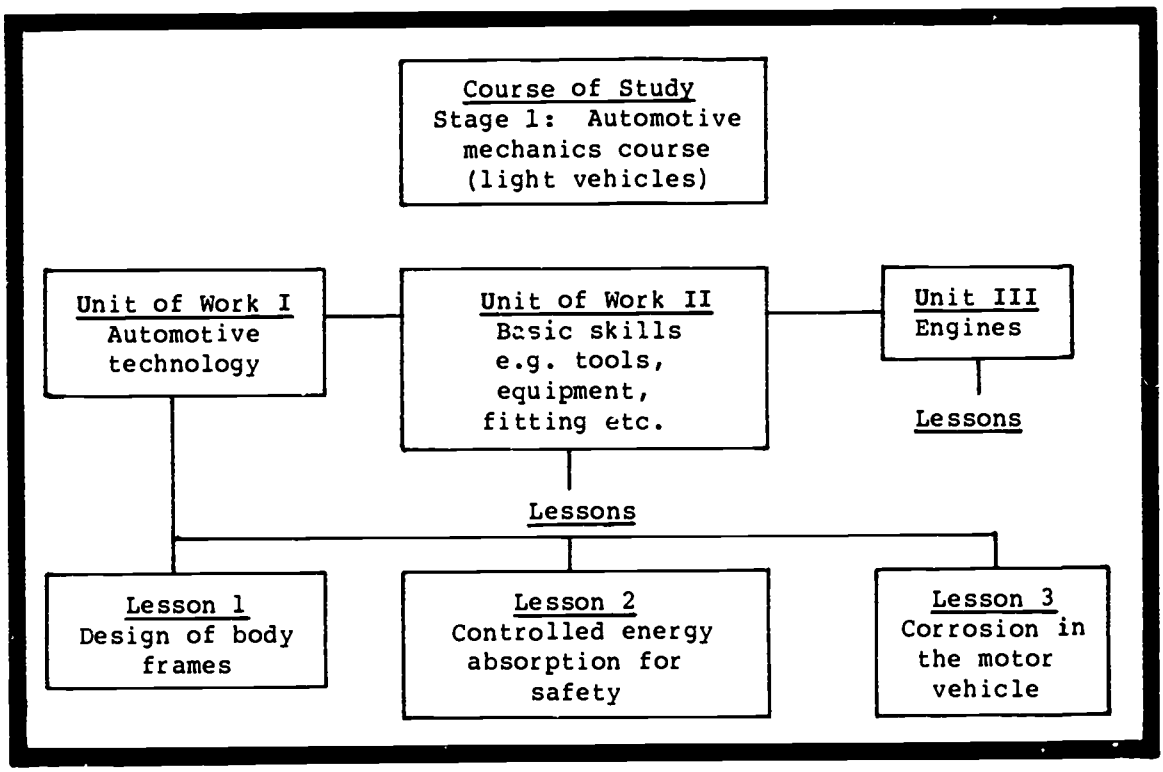


Figure 5.1 Relation of course of study, unit of work and lessons

The course of study and the units of work are found in the curriculum guide for a particular course and often located in the course handbook.

Further information concerning the units of work could be obtained from:

- the syllabus
- other experienced vocational educators in the field, e.g. head teachers and teachers
- resource material such as textbooks and journals.

5.2 THE UNIT OF WORK: CONTENT

Units of work should flow in some logical order, each unit building on theory or skills previously learned. This organisation is sometimes known as a hierarchical structure. If a unit of work plan is not provided, consider what theory, information and skills are critical for your students to know in their work. This is the sort of material that should be considered as the basis of your set lessons before general information such as the historical or social significance of the material is considered. This sort of information, useful as it is, may be of only secondary importance. For example, it is more important for an electrical apprentice to be able to successfully wire a 3-pin plug than to be able to describe the history of the 3-pin plug. This piece of history, however, may still be useful to complete theoretical understanding of the wiring if course time permits its exposition. The point to be noted is not whether it is relevant or irrelevant but rather what priority should elements of theory or skill have in a unit of work.

The teacher faced with definite time constraints should keep in mind the following simple diagram when considering the problem of what content matter to include or omit from a given unit of work or lesson.

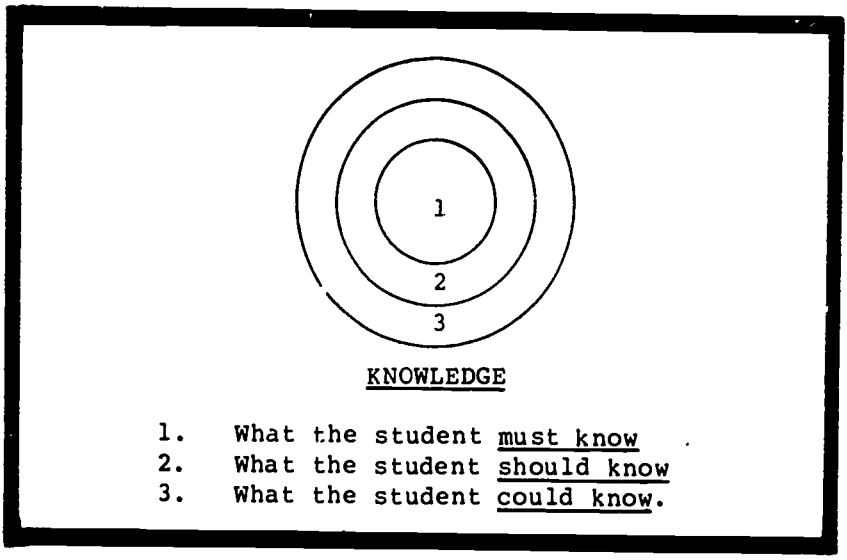


Figure 5.2 Course content

In order to choose what content should be included or excluded from a unit of work, consider whether the information or skill is significant and relevant for the students. To do this, you should consider questions like the following: Are the theory or skill elements based on an analysis of what the students will need to know or be able to do in their vocational occupation? Are these elements relevant in that they enable students to see how as practitioners they can apply or use the information or skill, given their age and background experience? Is the unit of work feasible, given the tools or equipment available in the college; or practical, given the instructional resources or time available in which to teach the unit?

Often content is set, and exam priority determines that it must be covered during term time. In other cases, however, student reaction to the proposed content of a unit can be obtained by holding a class discussion or by individual interview. This feedback may indicate areas of student interest, prior knowledge or skills or the lack of them and could enable the teacher to vary the priority of the theory or skills to be taught to allow more time to be spent on areas of student weakness. Be aware, however, that the diner may be a fair judge of a meal's look, taste and smell but not of its nutritional value. Final decisions about the actual content to be covered are best left to the experienced practitioner—in this case the teacher who has access to resources (e.g. knowledge, skills, colleagues, textbooks, etc.).

5.3 SEQUENCING UNITS OF WORK

The content of each of the units of work should not only be planned but the units themselves should be sequenced in a way that aids student learning. This may mean that the units are presented in a sequence that is more convenient for the student than it is for the teacher. In this respect consider whether the arrangement of subject matter is logical, interesting and builds steadily on what is learned. The sequence of units should:

- elicit motivation and interest from the initial unit;
- get the course off and running in a positive, enjoyable way. Link the new material with what the students already know, or at least with their past experience. Use interesting but relevant anecdotes (real or imaginary) and actively involve the student in the unit via discussion to help elicit interest and increase motivation. Careful sequencing itself will build motivation and self confidence as the students gain knowledge of and obtain feedback on their work;

- if the material and level of ability of the students have been determined, present the general idea first and then move to the specific examples or details or, alternatively, move from the examples to the general principle. What is important is that the general principle is spelt out clearly at some time. Material presented in this way should prove to be more meaningful to the students and research evidence indicates that they will remember some of the material for a longer period;

- be logical, in that the understandable and important material is presented as basic building blocks early in the sequence. Consider students' readiness for the learning - are you starting them at a level that is beyond them?

As an example, consider the course outlined earlier (see Figure 5.1). In this case the initial unit, called Automotive Technology, is a general one. It examines car design and so it should arouse interest in students. It may be linked easily with existing knowledge that automotive apprentices might have about the purpose of the design features of a variety of motor vehicles. It would also be an area in which active student responding to questions and discussion could encourage learning and increase motivation. This unit, Automotive Technology, is general and logical in that it is related to other vehicle technology (e.g. engines, transmissions, and so on) concerning, for instance, what a vehicle should be capable of doing, how safe it should be in a collision, how it achieves fuel economy and its overall appearance.

Unit 2 flows from Unit 1 and establishes the groundwork in basic skills to enable students to use effectively the tools and equipment needed in Unit 3 and in the following units where students are required to fit engines or transmissions.

5.4 ACTIVE STUDENT LEARNING

A problem that goes hand in hand with organising the content of a course is how to teach that content. The point to note is that methods of gaining active student learning should be planned at the same time that content is being considered. Some teachers teach their selected content using only one or two types of learning activity. There is a wide variety of activities that can be used to make the students more active in learning and keep motivation high. The following are examples of activities that could be considered for any unit of work and used appropriately in particular lessons:

- Viewing films, videotapes or listening to audio tapes or an actual demonstration.
- Completing some skilled practice exercise.
- Solving some set problem or completing an exercise.
- Performing some experiment, perhaps in a laboratory.
- Responding to questions or asking questions.
- Making brief coherent notes.
- Expanding brief board notes into coherent form.
- Reading suggested pages of a textbook to determine relationships with the facts learned.
- Trying to relate facts just learned to current problems.
- Recounting work experience in relation to the facts learned.
- Giving brief talks or lectures on the topic in hand.
- Giving oral or written examples different from those used by the teacher.
- Handling or observing samples, specimens, models, and so on.
- Identifying, classifying, comparing or contrasting certain things on the basis of information given.
- Sketching, drawing, or copying something indicating the names of the parts, dimensions, recording functions of various elements, and so on.
- Presenting in groups pros and cons of process, machine, method, and so on.
- Making something as a result of instructions given.
- Recording everyday examples of the use of the principle, method, process, machine, and so on.
- Completing short answer tests involving understanding of information taught.
- Completing individually programmed text or module.
- Observing the skilled worker in the work situation.
- Constructing or producing a project relevant to a unit objective.

Although these ideas for active learning are procedures or ways of presenting content, they are important and worth considering at the time the content is being decided upon, for the following reasons:

- They help make the content more meaningful to the learner. Meaningful content is learned faster, in greater amounts and remembered longer than material unrelated to the theory or practice associated with the unit.
- They make the learner active in learning the set content rather than remaining passive. An active learner is more motivated and, therefore, more likely to gain practical knowledge from the tasks or material, and consequently, gains greater feedback or knowledge of results. This means that students' behaviour can be guided more quickly and successfully to the pre-set educational goals.
- Practice and feedback are necessary conditions for all human learning.

5.5 THE UNIT OF WORK: FORMAT

There is no one best format for developing a unit of work, since the teacher's objectives help determine what is to be taught, how it is taught, what is to be tested and how it is tested. Overall, each unit of work should contain:

- A title
- An overview or general introduction
- Objectives
- An outline of the contents in condensed form. The planned lessons develop the contents in more detail
- Ideas for student learning activities
- Instructional resource materials required, if any
- General ideas for the assessment of the content.

5.6 THE LESSON

When the content of the units of work has been decided upon (or already set out) decide on the teaching procedures required for a series of lessons. In the case of our automotive mechanics course for Unit I - Design of body frames, you recall that we decided to develop three lessons: 1 - Design of body frames, 2 - Energy absorption of body frames for safety and 3 - Corrosion of body frames. The comments made in Chapter 4 (Planning teaching) on the basic steps in lesson preparation refer to the development of any lesson from a unit of work. The lesson plan developed for the topic 'Corrosion in a motor vehicle' shows how content and method (or teaching procedures) have been arranged in a set of lesson notes. Notice that the content for that lesson is developed logically over no more than five to seven steps and is clearly structured, moving from the need for rust prevention through causes, to treatments and correction of rust areas.

In order to make verbal material more meaningful or familiar to the students the teacher should organise the material into some sort of hierarchical structure. One idea is to teach from the higher levels of hierarchy to the lower, namely, from the more general or inclusive concepts to the more specific. For example, during an automotive trade lesson a brief discussion or demonstration of the general concept of friction might precede a lesson on brakes and materials. In a painting and decorating lesson a general discussion of the three basic painting methods (namely, roller, brushes and spray) could precede a lesson on foam roller application, or during a welding lesson an introduction using the welding qualities of various metals in relation to other metals and alloys (for example, carbon steels, alloy steels, heat-treated steels, cold-treated steels, and so on) could be given before a lesson on welding medium carbon steel.

This use of a general advanced organiser as an aid to learning and later retrieval of information from memory is based on the assumption that the human memory organises material in such a way that abstract material subsumes (or incorporates) less abstract material. For example, if the general concept is painting methods, this subsumes more specific methods such as 'using rollers', and functions in the same way with even more specific examples such as types of rollers (foam and mohair). If this assumption is valid it implies that if verbal material is taught with regard to the correct hierarchy, then retrieval of that material will be easier. There are other ways, however, to achieve the same learning: one could work by presenting examples and building towards exposition of the general principle or by presenting a series of problems to be solved.

Teachers should try to make material as meaningful as possible by using familiar examples of a concept, anecdotes or models and visual or auditory examples. For example, to enable new verbal material to be understood a teacher should gauge the background knowledge and skills of the students then use pictorial aids, models or verbal illustrations which make use of material already familiar to the students. These procedures help structure and organise the lesson content more effectively. An instance of these procedures is the electrical trades teacher who attempts to explain the abstract concept of the function of Ohm's Law (the relationship between electrical pressure, current flow and resistance) by comparing the pressure and flow of electrons moving along a wire with the analogous and already understood example of the pressure and flow of water along a pipe.

Perhaps when teaching complex verbal material or complex skills the best procedure is to give a complete overview first (include the general principle if any) or demonstrate the whole skill. Then give the students practice on the component material or skills (from simple to complex, gradually revising and adding new material, or component skills) until the whole of the material is understood or the complete skill can be practised. This allows the development of connections between the various parts of the skill, all of which later aid the student's memory. It is particularly important, when teaching complex skills (for example, computer programming, plastering a wall, typing, and so on) that students are given plenty of practice on the initial tasks.

To break or not to break? That is the question

The average concentration span of a student is not long. Estimates sometimes put it at only about 20 minutes duration so that care is required even within the lesson, especially if it is of 2-3 hours duration, to provide breaks. Fortunately for teachers, however, the attention span of students can vary enormously. It is likely to be longer if the students are experienced, intellectually able or skilled, motivated, involved and interested in a morning lesson. Furthermore, the number of breaks during a lesson can be reduced if the teacher provides:

- plenty of variety. Researchers have found that variety in the form of movement and gesture are positively related to increased attention span and student achievement.
- Opportunities for active student responding (see Section 5.4).
- Variation in communication channels. Use visual as well as auditory input. Adults, for instance, prefer visual input.
- Enthusiasm for the content being taught. Try to teach in an inspired way.

How long to make each segment of theory or practice within a lesson, therefore, obviously depends on a large range of factors relevant to the time of the day or night, the state of the learner, the content and organisation of content and the teacher's presentation.

The teacher should think about all of these factors and space teaching segments accordingly but should always be prepared to shorten or lengthen a presentation segment as a result of direct observation of the behaviour of the majority of students. In any case, even with optimum conditions, 45-50 minutes is about as long as any student is likely to remain attentive. After a short break the students' attention span, other things being equal, is likely to be much less so that another break is usually required in only one-half to two-thirds the time taken for the first teaching segment. The latter third of three-hour lessons (especially at night) will be particularly unproductive unless a great deal of variety is provided.

5.7 SUMMARY

In order to complete successfully the procedures mentioned, a skilled task or content analysis is very important. The content or task must be examined and the component steps or procedures clearly identified and then ordered in meaningful, logically developed chunks ready for teaching. Of course, how large these chunks should be and how many should be taught during any lesson depends on many factors such as the nature of the task, the complexity of the verbal material, the ability, previous experience and intelligence of the students.

One other point to note is that there is no best way of organising content. The best way is the way that works with a particular class. For this reason teachers should maintain flexibility in teaching their prepared content to ensure that it is more effectively learned. This could mean, during a lesson, breaking down the task even further into more easily manageable steps or by contrast, moving quickly ahead over content already mastered or, perhaps, even adding new content to help make a point clearer. These sorts of decisions made during a lesson help ensure that the content is meaningful, learned effectively and that the student's interest is maintained.

CHAPTER SIX: MEETING THE FIRST CLASS (G. BENNETT & A. WATSON)

6. PURPOSE OF THIS CHAPTER

When students enrol in a new class they usually have certain expectations about what is likely to occur. They have some view of what the course should be about and of the way it might be taught as well as what may be in it for them. These expectations, however, are usually vague and indefinite because they are based on an inadequate knowledge of the situation they are entering and, as a result, such student expectations are often accompanied by feelings of doubt, uncertainty and anxiety.

The purpose of this chapter is to direct your attention to some procedures which can be followed when preparing for and presenting the first class lesson in a course. That is, when the aim of the lesson is to make students aware of the major objectives, content and requirements of the course and to promote favourable attitudes towards the course. The chapter is divided as follows:

After reading the chapter you should be able to describe the importance of the first meeting of the teacher and the class, describe six basic procedures to be followed during this meeting, and set out a lesson plan for the first lesson to a new class applying the procedures suggested.

6.1 THE IMPORTANCE OF THE FIRST LESSON

Students entering a new class bring with them certain ideas about what the course involves and what is expected of them in relation to the course activities. If such expectations about the course and the way it is to be taught and examined are not clarified early, initial doubts and uncertainties may be intensified, causing adverse effects upon learning, and problems of discipline. A good example of an inadequate conception of what a technical course is like is often found in the case of the trade apprentice who expects the course to be a practical one and is surprised, sometimes dismayed, at its theoretical and mathematical content.

Psychologists recognise similar problem areas which require individuals to adjust their behaviour to meet the demands of new situations. They argue further that those situations which are unstructured and ambiguous are the ones to which it is most difficult to adjust and the ones most likely to result in doubts, frustrations and anxieties.

The view taken in this chapter is that students joining a new class are presented with problems of adjustment, and that it is the function of the teacher at the first meeting to provide a clear, structured and unambiguous picture of the classroom situation and its requirements; that is, to let students know what the course is about, what they are expected to do about the course and how they are expected to behave. The following suggestions are offered as practical means of achieving this end.

6.2 PROCEDURES FOR THE FIRST LESSON

a) Teachers should begin each new class by introducing themselves. They should write their names on the board and suggest that students make a note of it. In this way students are put at ease and spared the embarrassment of wishing to ask a question but not knowing how to address the teacher. Students can be curious about the personality and background of teachers and it sometimes helps to establish a bond with students if the teacher gives a brief description of personal background. Technical teachers are chosen from those who have had wide experience in commerce and industry and have demonstrated their ability in their particular fields. By indicating some of this experience to students, teachers should inspire in them a feeling of confidence. It is important, also, at this time for teachers to bolster students' confidence by stating that they (teachers) are vitally interested in the progress of the class and are prepared to offer assistance and advice whenever it is required. If possible, a regular time and place for student interviews should be made known. Teachers' statements that they intend to be as objective and impartial towards students as possible can also build students' confidence. This unbiased attitude can be demonstrated by teachers later in their handling of problem cases and in the assigning of marks and grades; however, in the first instance it is of primary importance that the teacher's general attitude is at least conveyed to the class.

b) The teacher's introduction to the class might be followed by a general introduction of students. In compiling or marking the roll, teachers could ask students to state their names and places of employment. Should the class be made up of fairly mature students this procedure could be taken even further and include an invitation to students to comment on their aims and expectations. Whichever method is used, however, the introductions should serve to remove some of the barriers and inhibitions presented to students by being members of a new class.

For example, one TAFE teacher has described the steps in meeting a class for the first time as follows: 'I proceeded to give a summary of my interests and the reason I had chosen the teaching profession as a career . . . The students in turn stood up before the class and participated by introducing themselves and giving a short description of their past. From this I made notes on each student and used their introductions as a means of understanding them as individuals and not just identifying faces'.

Once students' curiosity about the teacher and their fellow students has been satisfied, they will want to know more about the course and its requirements. This can be expounded in detail at the initial meeting.

c) A first step in informing students about the course and its requirements is to discuss the broad objectives of the course. This might be accomplished by encouraging discussion among students of what they expect the course to achieve. The teacher's task here is to help structure the suggestions given and to clarify any misconceptions students might have about what the course is intended to do.

d) Next, the teacher should present an outline of the course indicating the nature, order and scope of the topics to be dealt with and relating these where possible to the objectives already discussed. It is useful here to issue copies of the course outline if they have not already been provided.

The course outline might briefly describe the broad objectives and list the topics to be covered:

For example:

Course: Motor maintenance

Objectives:

- To provide instruction on the basic operation of the motor vehicle and its various components.
- To develop basic skills with hand tools which will enable students to carry out basic repairs and servicing.
- To enable students to diagnose minor faults and be able to carry out temporary roadside repairs.

Course Topics:

- Stroke cycle and engine construction
- Engine Diagnosis
- Vehicle Fuel Systems
- Vehicle Ignition Systems
- Engine Exhaust and Lubrication
- Vehicle Heat Exchange Systems
- Drive Lines, Transmissions and Rear Axle Assembly
- Vehicle Braking Systems
- Suspension and Steering
- Basic Electrical Systems
- General Vehicle Service.

In outlining the course every attempt should be made to give students a clear picture of what topics are to be attempted, why these have been included in the course, and the relationships between them. This will help to allay some of the students' doubts and place them in a better position to receive and locate the detailed treatment given to course topics in subsequent lessons.

e) Having presented an outline of the course, the teacher should tell students what is expected of them regarding note-taking and course requirements. In some classes the frequent issue of teacher-prepared notes will satisfy the first of these requirements; in others, students will be expected to make their own notes and the techniques of doing this should be discussed.

It is useful to indicate the nature and timing of assignments and similar course exercises on the course outline itself, or to provide a statement about them. It is important also to indicate clearly the extent to which assignments and practical work will contribute to the final assessment of students.

If self-paced or open learning procedures are to be a feature of the course these should also be briefly described at this stage.

f) Students should be told what method of assessment will be used for the course. This should include such information as whether there will be three term tests, or one at the end of the year which will cover the year's work; and the relative weighting of the various assessment components.

For example: Unit Course: Biology

Forms of assessment	Mark allocation
One Centrally Set Objective Test (based on whole course)	100
Five Class Objective Tests (one for each topic)	100
Five Laboratory Reports (one for each topic)	50
Five Research Assignments (one for each topic)	50
TOTAL	300 marks

Students should also be told what textbooks and equipment they will need. Where more than one text is recommended as basic reading, the teacher should present an objective review of each text indicating its strengths and weaknesses in relation to various segments of the course.

g) Finally, students will often be in doubt about the kind of behaviour expected of them; in short, what they may and may not do. Since students are adjusting in an unstructured situation, it is imperative that they are told at this first meeting what is expected of them and what they, in turn, can expect. In short, the situation can be structured by the teacher if a few basic rules for student behaviour are indicated.

To be effective, rules should be few in number, and reasonable so that they are likely to find acceptance among students. The specific rules which a teacher needs to make will vary with the kinds of students enrolled. For example, in classes where most students are quite mature there will be less need for rules of behaviour than in classes such as trade or secretarial classes which usually comprise younger students. In all cases, however, when suggestions about behaviour are made it should be stressed that they are for the benefit of everyone and that non-observance by individuals will be disruptive and detrimental to the progress of other students. Rules for behaviour in class could encompass punctuality, talking and disturbances, eating and smoking, how questions are to be answered and how seating should be used.

Although some flexibility is important, it is possible to be too flexible, to the detriment of the student. For example, dates for completion of assignments should not be extended except under exceptional circumstances.

6.3 SUMMARY

The first meeting of the teacher and class is important and should be devoted to structuring an unfamiliar situation and to developing favourable attitudes. This can be achieved if teachers provide clear information about themselves, general expectations, the objectives and content of the course, and the standard of behaviour required of students.

CHAPTER SEVEN: TEACHING LARGE GROUPS (W. HALL)

7. PURPOSE OF THIS CHAPTER

Until recently, to 'teach' meant to stand in front of a large group of students, to talk at (lecture) the students almost continuously, passing on information, and proving that the teacher was the one who knew all the answers and was in authority. To ask questions was impolite, even a threat to the teacher's position. TAFE Colleges have suffered less from this approach than other tertiary institutions partly because of the practical nature of TAFE courses, and partly because most TAFE lecturers are now required to undergo training before being allowed to teach. (Amazingly, higher education teachers still do not need to have any formal, or informal, training before teaching.)

Nowadays, teaching involves participating in group discussion, organising assignments, demonstrating practical work, preparing material for individualised instruction and computer assisted learning, as well as lecturing and acting as a resource person.

Some approaches to teaching can best be used with small groups (i.e. with up to about 12 students); others are best used with large groups. However, even with large groups, a wide range of teaching approaches can still be used, as the following table shows.

TABLE 7.1 Teaching approaches with different-sized groups

TECHNIQUE	GROUP SIZE		
	Large	Small groups	Individuals
Lecture presentation	X	X	X
Demonstration	X	X	X
Practical work	X	X	X
Project	-	X	X
Film/Video/Sound	X	X	X
Group discussion	X	X	-
One-to-one discussion	X	X	X
Individualised instruction	-	-	X
Computer assisted learning	-	-	X
Printed notes	X	X	X

Therefore, although a lecture presentation will sometimes be appropriate for teaching a large group, other techniques should not be neglected just because you have a large class. Even small group discussion is possible with a class of more than 100.

The purpose of this chapter is to describe how to prepare for and to teach large groups of students. The chapter is divided as follows:

After reading this chapter you should be able to prepare, deliver and evaluate a lecture presentation; and you should be able to use other techniques when teaching large groups, so that class teaching adopts a mixture of approaches in order to make the presentation more interesting.

Throughout the chapter you should recall the position of teaching in the model of the teaching process.

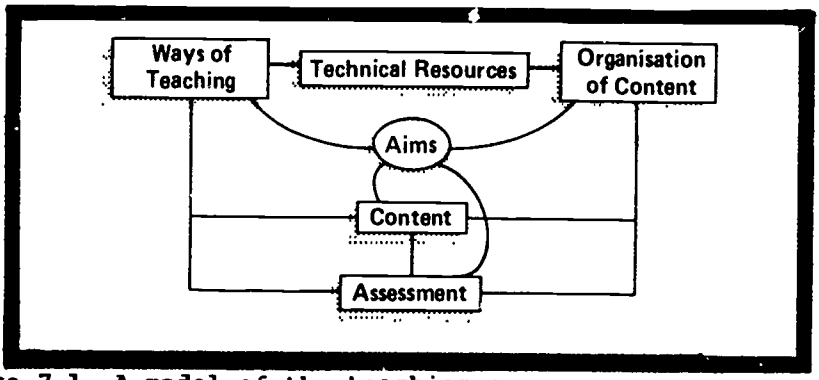


Figure 7.1 A model of the teaching process

7.1 LECTURING

A lecture is given when a teacher talks to a person or to a group of people for four to five minutes, or longer. Lecturing is still one of the most common teaching technique at all levels of education. It was originally based on the fact that few books were available to students, that the lecturer was frequently the only person with knowledge of the subject being taught, and that other ways of transmitting information (such as, cheap printing or video) did not exist. None of these assumptions is usually true today.

Nevertheless, lectures are still given to students because teachers believe that lectures can be inspirational, that they can help to summarise a piece of work and help to make it interesting, and that they can help to pace students' work. While all of these can be true, frequently they are not, and students often are forced to sit through boring, unstructured talks.

When lecturing there are both good and poor areas to stand in before a class. These areas are shown in Figure 7.2.

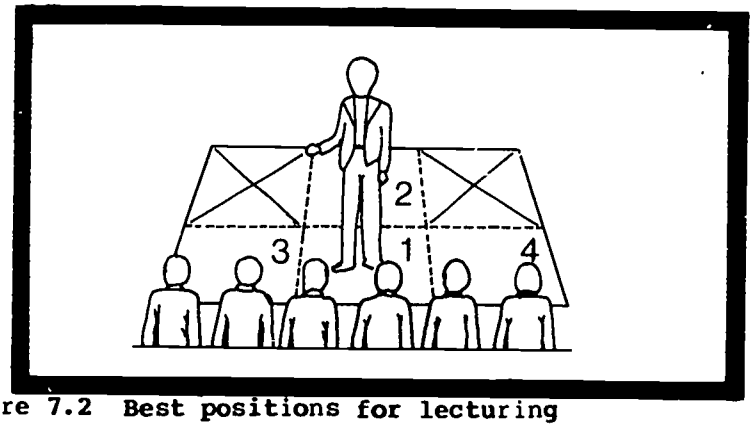


Figure 7.2 Best positions for lecturing

If a lecture is to be useful, it should do more than merely transfer information from the teacher's notes to students' notebooks. When this is done, less than one-half of the material is transmitted and so it is a wasteful process. It is also a wasteful process if there is not immediate application of what is imparted in a lecture. By 'immediate' is meant within an hour or two. If this is not done, most of the lecture content will be forgotten by the students.

Theory lectures which are not co-ordinated with the corresponding practical work can be pointless. Conversely, the example given in Table 7.2 shows how effectively practical and theoretical work can be integrated. (The example is from an SA TAFE College.)

Aims to be achieved

What aims can, or cannot, be achieved by a lecture presentation? As mentioned above, lectures can be used to impart information, to provide an overview (or summary) of a topic, and to pace students' work. Different aims, such as attitudinal ones, are best achieved by using other teaching techniques, and skills cannot be learned just by listening to someone talk. The uninterrupted lecture is a poor method of learning and should always be used in association with other teaching techniques (e.g. demonstration, a film or video, or small group discussion). These other techniques are described later in this chapter as well as in later chapters.

7.2 PREPARING AND GIVING A LECTURE

The old rule 'tell them what you are going to say, say it, and then tell them what you have just said' still holds true when lecturing. Good presentations should have a beginning, a middle, and an end. One suggested approach is that made by the Staff Development Unit of the Tasmanian TAFE Department (Figure 7.3). You will notice that this approach has been used for every chapter of this book.

The easiest way to prepare a lecture, and the easiest way to follow a lecture presentation, is to structure information under major headings. This has been done for this (and every) chapter, the structure itself being explained to the reader in the first section of each chapter.

Never read a lecture (especially from a textbook) and never lecture from a handout, although a handout giving the lecture's outline, any complicated drawings, useful references and post-lecture activities is always useful. Make use of visual aids to enliven the presentation, ask questions (and wait for answers!).

TABLE 7.2 Lesson correlation sheet

LESSON		PRINCIPLES	LABORATORY DRAWING/TUT.	THEORY	PRACTICAL
1		SEE SPECIAL PROGRAMME FOR DAY 1 Introduction to College			WORKSHOPS: location, procedures, safe practice. Flex and plug top.
		Entrance tests. Literacy, numeracy.	Introduction to laboratory	FIRE, Nature and control of. Workshop safety	
2	A	Atomic Theory. Charge. Power sources. Conductors, insulators Semiconductors.	First Aid Resuscitation	ELECTRICAL SAFETY: Function of earthwire, effects of shock.	BASIC FITTING PROJECT 4 Transformer clamp plates
	B	Electrical concepts Pressure & flow. The circuit and its parts.		FILES and FILING ISSUE PROJECT 1	
3	A	"Resistance"=opposition Effect in circuit. Connection of V/m, A/m "Series" and "parallel" connection.	Lab. Exp 1 General circuit principles and connection.	MEASURING INSTRUMENTS; use and accuracy.	BASIC FITTING PROJECT 4
	B	Volts, amps and ohms. S.I. units. Multiples, etc. Ohm's Law: V = IR ISSUE PROJECT 1		MARKING OUT; use of datum to minimise errors.	
4	A	The use of ohmeters to measure resistance. Scales Precautions in use.	Drawing: Sketching for preparation & Basic laboratory circuits lettering	METAL CUTTING: tools used.	PROJECT 4
	B	Mention Reactance and Impedance as other concepts of opposition in A.C. circuits. Ohm's Law problems.		Outline test procedure and techniques. TEST 1	
5	A	Mechanical and electrical power. $P = VI = I^2R = V^2/R.$ Wattmeter connections	Lab. Exp 2 Ohm's Law	DRILLS AND DRILLING; the drill, the process safety in security of work.	PROJECT 4 (PROJECT 7 follows upon satisfactory completion of 4).
	B	TEST 1		DRILLS and DRILLING; relationship between rpm and cutting speed.	

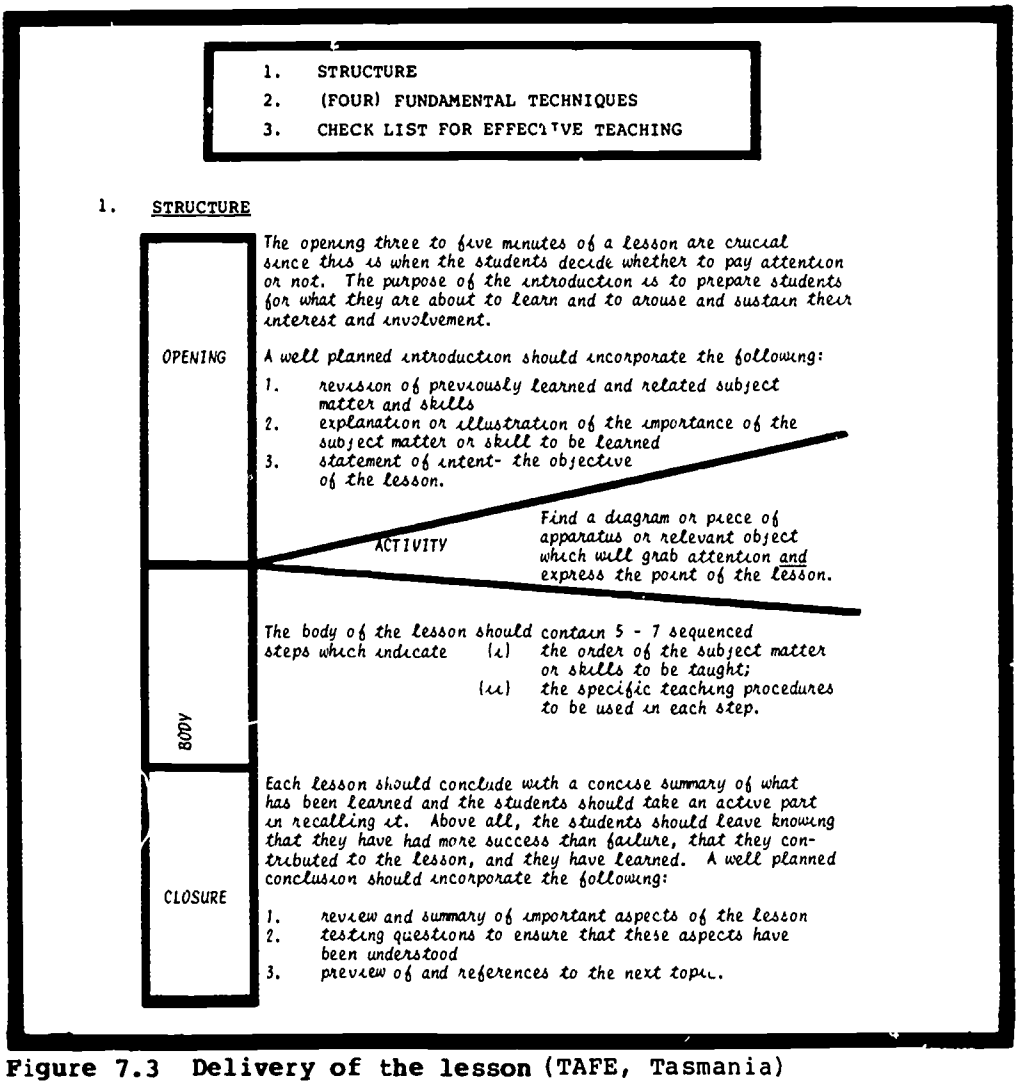


Figure 7.3 Delivery of the lesson (TAFE, Tasmania)

Positive points on presentation

1. Prepare students for the topic—create and maintain interest in the topic

Learning is more effective if students are ready for and interested in the subject matter to be learned. Measures should be taken, therefore, to prepare students for the topic and create interest in the topic during the introduction to the lecture and to maintain interest and attention throughout the lecture.

Probably the best way to prepare students for new material is to first revise previously learned material to which the new material can be related. A lesson on the milling machine might be introduced, for instance, by first revising previous material

on the lathe to which the new material on the milling machine can be related. Similarly, the first lesson on the basic micrometer might be introduced by first revising the material on the limitations of the calipers and steel rule.

Procedures which may be adopted to create interest and attention include the following:

- use anecdotes and illustrations indicating the importance and relevance of the topic or point to be discussed;
- provide variations in auditory or visual stimulation (introduction of visual aid; variation in lecturing technique);
- stimulate students' curiosity;
- convey enthusiasm.

Perhaps the best procedure to stimulate interest and attention, though, is to introduce questioning, discussion and interesting student activities. These procedures will be discussed in subsequent units.

2. Illustrate/explain lesson material

Factual information and theoretical subject matter are more readily acquired and retained if the language used and facts, concepts, principles, relationships, and so on, are meaningful to the learner, that is, if they are readily understood.

Procedures which may be used to explain and illustrate lesson material, so that it is meaningful and readily understood, include the following:

- explain or state the basic idea in clear and simple terms (e.g., definition of a milling machine);
- write the key idea on the chalkboard;
- re-express and elaborate, describing general nature, purpose and features (e.g., explain the general purpose and distinguishing features of the milling machine);
- provide examples, illustrations, instances of the basic concept—using visual aids at this point if possible (e.g., pictures of different milling machines; build up model of a basic milling machine);
- use analogies, i.e., relate the new idea to analogous ideas with which the learner is already familiar (e.g, relate the milling machine to the lathe pointing out similarities and differences; relate the operation of a micrometer to the operation of a G clamp);
- provide non-examples. (Point out machines which are not milling machines and explain why they are not);
- recapitulate, restate, summarise.

Procedures such as these, if effectively combined, widen and deepen students' understanding of the basic concepts and relationships written in the lecture. Explaining concepts by using a combination of procedures is sometimes referred to as the cyclical method of exposition.

If procedures such as these are not employed, if formal definitions alone are provided, misconceptions will arise and meaningless rote or verbatim learning will predominate.

3. Make the organisation clear (i.e., bring out the structure or relationships within the material)

Factual and theoretical subject matter is easier to acquire and comprehend as a whole if it is arranged or organised in a meaningful and logical way. This aspect has been discussed earlier as part of the preparation phase and one method or pattern of organisation suitable for the presentation of material in a lecture also has been discussed.

It is not enough for a lecture to be well organised on a teacher's plan, however, if it has no apparent pattern when delivered. In order to bring out the organisation or structure of a lecture the following procedures are recommended.

- Overview structure at the outset. Describe the scope and general sequence of material to be covered during the introduction (e.g., 'Today we will consider the milling machine—its basic features and four basic parts: 1. base and column; 2. knee; 3. saddle; 4. table').

- Itemise and link each point. That is, emphasise each new step and point as it is presented, give it a number and a heading, and write it on the board. This provides the 'peg' underneath which the detail may be placed and it facilitates attention, recall and note-taking.

- Use a progressive chalkboard summary. Perhaps the most effective procedure of all to ensure that the student comprehends and acquires the subject matter as a whole, and the links within, is to build up a summary of the subject matter on the chalkboard (or overhead projector) as the lesson progresses. That is, put up major headings and itemised points as soon as they are mentioned and gradually build up a summary or outline of the lesson from step to step.

This procedure, of course, assists student note-taking. More importantly though, it ensures that students have maximum opportunity to understand the relationships within the subject matter and the lesson as a whole, both during the lesson and at the conclusion when the summary is complete.

- Review and consolidate during the lesson; that is, pause, review and go back over preceding steps before going on to the next step. This procedure aids learning by providing a rest period and by showing how the segments of a lecture are interrelated and related to the whole.

- Review, summarise and consolidate during the conclusion. This procedure provides teachers with their last opportunity to review and consolidate the main points and the relationships within the material.

4. Make effective use of voice and personality

The effectiveness of many of these procedures will be reduced, of course, if the lecturer fails to make effective use of his voice and personality. With this in mind, the following procedures are recommended.

- Voice

  - Clarity: pronounce words clearly; project voice to class
  - Tempo: pause now and again—don't race
  - Pitch: don't shout—have something in reserve
  - Inflection: don't talk in a monotone.

- Personality

  - Confidence: students should have confidence in teacher
  - Enthusiasm: zeal is catching
  - Friendly, helpful attitudes do much to 'put students on side'.

Errors to avoid

Some of the commonest errors made by teachers when presenting information by means of a lecture are listed below:

- Speaking too softly, or too quickly, or with insufficient clarity. To evaluate your presentation, you could ask a colleague to sit in on your lesson and then report back to you afterwards. Alternatively, you could tape record your presentation and replay the recording after the lecture.

- Not structuring the presentation. This has been discussed earlier in the chapter.

- Using badly prepared visual aids. You should read Chapter 12 'Instructional aids (Section 12.1 Selection principles and considerations)'. The overhead projector is one of the commonest resources. Teachers frequently project writing which is too small (never project typewriting or printed passages from books), or expect students to copy in a few seconds a diagram which has taken the lecturer an hour or so to draw. Shadowy hands moving across a transparency do not assist students at all!

  Chalkboards are frequently used as giant scribbling pads instead of being used to structure a presentation. A chalkboard presentation must be planned.

- Speaking to the rear wall, or ceiling, or into your notes, instead of looking at the class and judging their reactions to what is being taught. You should make a point of looking at the group right from the beginning of your lesson.

- Displaying irritating mannerisms, such as coin juggling, nervous coughing, spectacles shifting, nose rubbing, walking backwards and forwards.

7.3 OTHER TECHNIQUES FOR TEACHING LARGE GROUPS

The simple model of the teaching process described in Chapter 2 should be used to help determine which teaching technique to employ with small groups. The planning outline shown below, produced by the Victorian TAFE Staff Development and the Hawthorn State College, deals with the kind of questions you should consider (Figure 7.4).

You should choose the teaching technique which will best help you to achieve your aims for that particular lesson. Some of the techniques shown in Table 7.1 are now briefly described. You will use most, perhaps all, of these in any one lesson with a large group, moving from one to the other, as appropriate.

PLANNING STEPS	PLANNING CHECKLIST	
1. CHOOSE THE TOPIC	Research	- what preceded this topic? - what follows this topic?
2. ESTABLISH THE OBJECTIVE(S) A. What should the students know and be able to do by the end of the session?	Write	- the objective(s) using short, clear sentences
3. ESTABLISH THE TOPIC CONTENT Q. What do I intend to teach, to achieve those objective(s)?	Research	- information available for the topic - how to develop a step by step logical sequence - key points. What to delete?
4. DEVELOP TEACHING STRATEGIES Q. How do I intend to teach, for maximum effectiveness?	Resources	- what is available for your students? e.g. textbooks, aids, classroom facilities, time, duplicated information
	Introduction	- where are you heading and why
	Activities for	variation - groups, panel discussions, etc.
	Time allocations for class activities	
	Conclusion	- written summary, application, questioning, revision
	Extension	- additional reading projects, assignments
5. EVALUATE YOUR EFFECTIVENESS Q. How effective was I in reaching the aims for this session?	Response	- from the students. Questioning
	Q (self)	- Were the aims and objectives clear? - How was my timing? - Did we cover the content adequately? - Was sufficient emphasis given to the essential points? - Did we recapitulate to ensure that effective learning had taken place for all members of the class?

Figure 7.4 Single session - a planning outline

Demonstration

If a picture is worth a thousand words, then a demonstration using actual equipment must be worth ten thousand words. This is because some students have difficulty in turning concepts into concrete example. Even just to see the size and shape of what is being talked about can be a tremendous help. Where the object is too small to be seen by the whole class, you could consider using video to enlarge the demonstration.

Practical work

The proverb 'I hear and I forget, I see and I remember, I do and I understand' also applies to teaching. Chapter 11 deals with the teaching of practical skills. The theoretical work covered in class should integrate with the practical work done in the laboratory or workshop, as mentioned earlier in this chapter.

In the Victorian TAFE Staff Development and Hawthorn State College booklet For the part time teacher the importance of practical work is discussed and shown as Figure 7.5 (below).

Using audio-visual aids

Whenever appropriate, you should break up a presentation with relevant audio or visual aids. Chapter 12, 'Instructional aids', describes the most common aids available in colleges. Always try out an aid before using it with a class. Murphy's law: 'If anything can go wrong, it will' nearly always seems to apply to audio-visual aids which are being used for the first time in a lesson.

Group discussion

Frequently, teachers are surprised to learn how easy it is to break up even very large groups of students into small groups of three to five in order to hold small group discussions. The groups form quite naturally when people turn around to face each other. You can post a general question for discussion half-way through a lesson, and then pick up the answers provided during the discussion time to lead into the second half of your presentation.

One-to-one discussion

One-to-one discussion can be as structured or as unstructured as you wish to make it. The class forms into pairs and one of the partners then explains to the other how (say) a piece of machinery works. The other person can test the knowledge of the one doing the explaining by asking questions. There are numerous variations to this approach, but all rely on one person talking while the other person listens or asks questions.

YOUR USE OF AIDS TO LEARNING

LEARNING

What we learn is influenced by how we learn.

(1) A catering student has the opportunity to use all five senses in learning the art of food presentation:

— Sight—by reading the recipe
Hearing—by listening to advice
Touch—by food texture and preparation
Smell)
Taste) the crucial test.

Other fields of learning offer usually less opportunity for the use of taste and smell. Good teaching combines the first three senses in subtle combinations, recognising the importance of stressing one above the other in differing circumstances.

(2) You don't get your driving licence by merely reading the road rules. In teaching a skill, the emphasis must be on learning by doing—co-ordinating sight, mind and action.

Controlled experiments confirm that the least effective teaching occurs when the teacher talks too much. The graphs below illustrate 'successful' and 'less-successful' use of teaching time related to doing, seeing and hearing. Seeing is a much more important learning sense than hearing. As an experienced boxer knows:
"One in the eye is worth three in the ear". This applies equally to teaching.

Comparing the Effective Use of Class-Time Teaching a skill

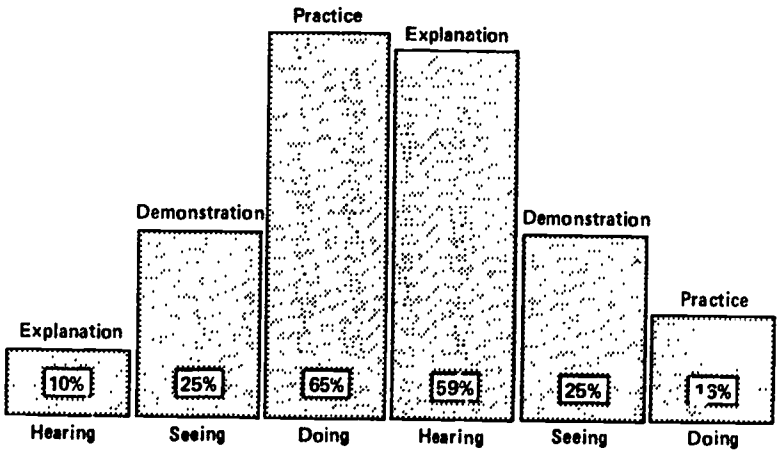


Figure 7.5 The importance of practical work (Victorian TAFE Board and Hawthorn State College)

Printed notes

Brief notes showing the main topics covered, giving the structure of the lesson, and reproducing important diagrams, charts, etc. can be extremely useful to students and to you as a teacher. It is a complete waste of time for students to have to copy down notes from a chalkboard or overhead transparency. Time can be used much more profitably.

7.4 EVALUATING LARGE GROUP TEACHING

Chapter 16 'Evaluating courses' provides advice on ways of evaluating teaching. Less direct approaches can also be effective and one such approach - a memory aid - has been outlined by the Staff Development Unit of TAFE in Tasmania (figure 7.6).

7.5 SAMPLE LESSON

Just what does a whole lesson look like? One approach is shown in this section. It deals with the topic of communication breakdown, and is a 90-minute lesson in a twelve weeks' foundation course in the subject Communications. The class consists of full-time, unemployed students, aged from 15 to 19.

The material which follows consists of:

- the teacher's notes for the lesson;
- copies of the five memos which will be distributed to demonstrate communication breakdown;
- copies of the overhead transparencies used.

When looking at the material, note the following:

- the lesson is structured. It has an introduction, a main body and a summary;
- the lesson has a clear objective;
- the teaching process model described in Chapter 2 has been used, linking all components of teaching in this lesson;
- a useful, amusing and interesting demonstration is provided;
- the next lesson is introduced.

This material was supplied by a member of the SA project advisory committee.

PLANNING AND PREPARATION

SUBJECT MATTER

KNOW

1 Class Standard
2 Requirement for rating
3 Subject thoroughly

TIME

1 How much time available?
2 Essential to teach "must know" points in time available?
3 How many in class?

TRAINING AIDS

1 What aids must I have?
2 Easily available?
3 Are they simple, colourful, visible, flexible, relevant, timely?

LESSON PLAN

1 Introduction Brief, relevant, interesting, aim clear?
2 Main points in logical sequence?
3 Explanations clear and simple?
4 Have I planned for maximum class activity?
5 Good summary and test

BEFORE STARTING LESSON CHECK:

1 Personal appearance
2 Training aids, lesson plan, blackboard prepared, film projector etc. ready?
3 Class comfort: Seating suitable? Distractions removed?

QUESTIONING TECHNIQUE

STEPS IN QUESTIONING

1 Ask - Face the class
2 Pause - Look all around
3 Name - by name, not "You"
4 Listen to answer
5 Evaluate

CHARACTERISTICS OF GOOD QUESTIONS

1 Clear
2 Brief
3 Relevant
4 Thought Provoking
5 Timely
6 Not a trick question
7 Not a 50/50 question

(All contributing to better learning)

SELF ASSESSMENT AFTER LESSON

Were the objectives of the lesson met in the time allowed? If not, what went wrong?

1 Did I lack enthusiasm or self confidence?
2 Were explanations clear?
3 Did I stick to my lesson plan?
4 Did my voice lack variety?
5 Any mistakes in subject matter?
6 Adequate class control?
7 Enough class activity?
8 Aids sufficient and well used?
9 Sufficient well-framed thought provoking questions?
10 Correct questioning technique employed?
11 Did I consolidate by stages?
12 Was I at all times Fair, Firm and Approachable?

Figure 7.6 An evaluation memory aid (TAFE, Tasmania)

TEACHER'S NOTES: COMMUNICATION (BREAKDOWN)

INTRODUCTION

1. What is going to happen during this lesson.

a) Recap on why there is communication breakdown stating three main points.

b) Demonstrate actual communication breakdown using the five internal memos.

c) Discussion on the three main points and what happened in demonstration.

d) Questions on communication breakdown. (Ask questions relevant to ability level of the class.)

OBJECTIVE

At the end of this lesson, students should be able to state the three main points of communication breakdown and explain each term as illustrated and explained to them during this lesson, by answering questions asked by the lecturer.

LESSON COMMENCES

1. Overhead projector (OHP) - three main points.

2. Discussion with class.

3. Demonstration OHP - discussion with class.

ASK QUESTIONS

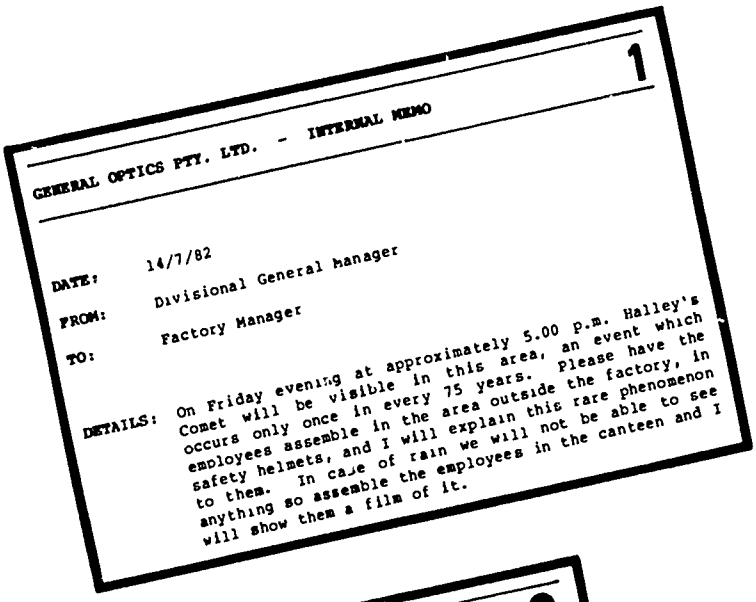
SUMMARY

Main points again.

NEXT LESSON: LISTENING SKILLS

Because these three processes are at work, whenever one-way procedures are being used inefficient and ineffective communication usually results.

DEMONSTRATION



GENERAL OPTICS PTY. LTD. - INTERNAL MEMO

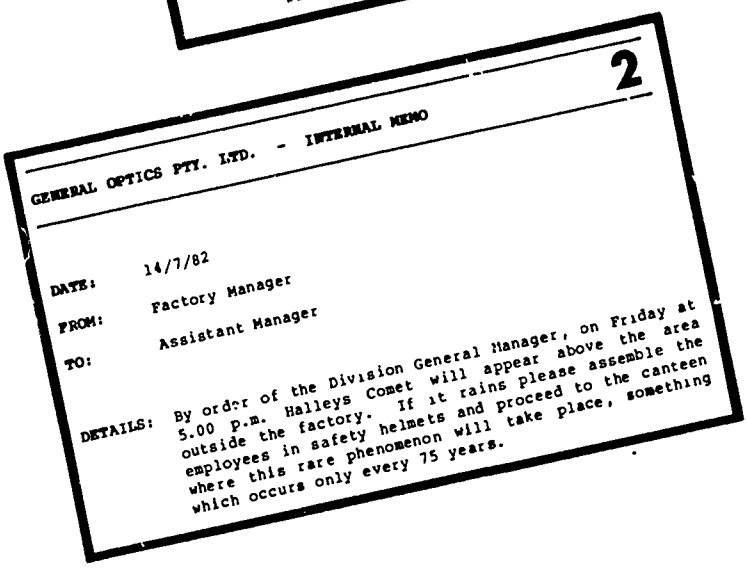
1

DATE: 14/7/82

FROM: Divisional General Manager

TO: Factory Manager

DETAILS: On Friday evening at approximately 5.00 p.m. Halley's Comet will be visible in this area, an event which occurs only once in every 75 years. Please have the employees assemble in the area outside the factory, in safety helmets, and I will explain this rare phenomenon to them. In case of rain we will not be able to see anything so assemble the employees in the canteen and I will show them a film of it.



GENERAL OPTICS PTY. LTD. - INTERNAL MEMO

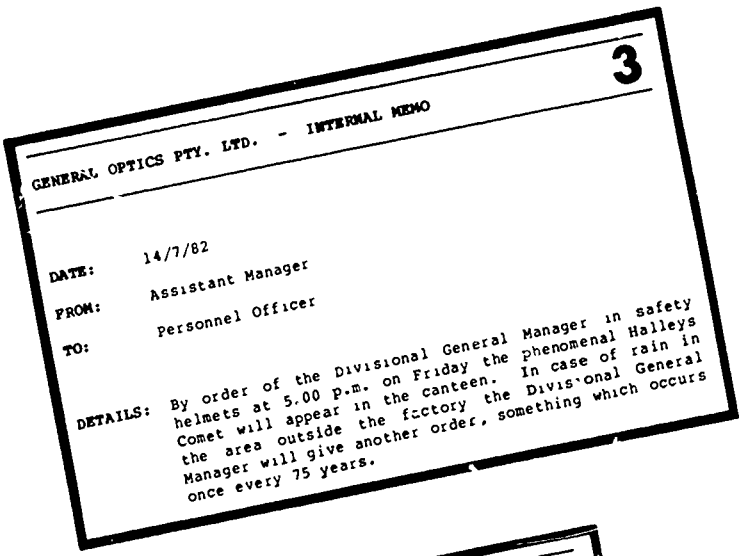
2

DATE: 14/7/82

FROM: Factory Manager

TO: Assistant Manager

DETAILS: By order of the Division General Manager, on Friday at 5.00 p.m. Halleys Comet will appear above the area outside the factory. If it rains please assemble the employees in safety helmets and proceed to the canteen where this rare phenomenon will take place, something which occurs only every 75 years.



GENERAL OPTICS PTY. LTD. - INTERNAL MEMO

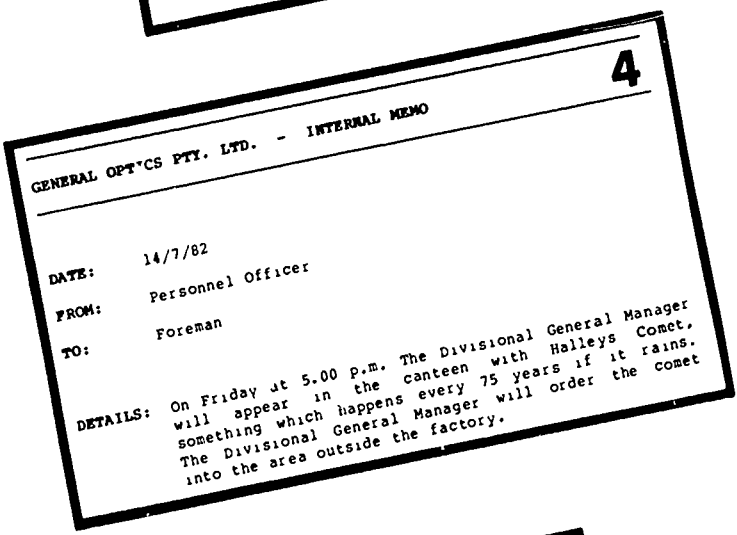
3

DATE: 14/7/82

FROM: Assistant Manager

TO: Personnel Officer

DETAILS: By order of the Divisional General Manager in safety helmets at 5.00 p.m. on Friday the phenomenal Halleys Comet will appear in the canteen. In case of rain in the area outside the factory the Divisional General Manager will give another order, something which occurs once every 75 years.



GENERAL OPTICS PTY. LTD. - INTERNAL MEMO

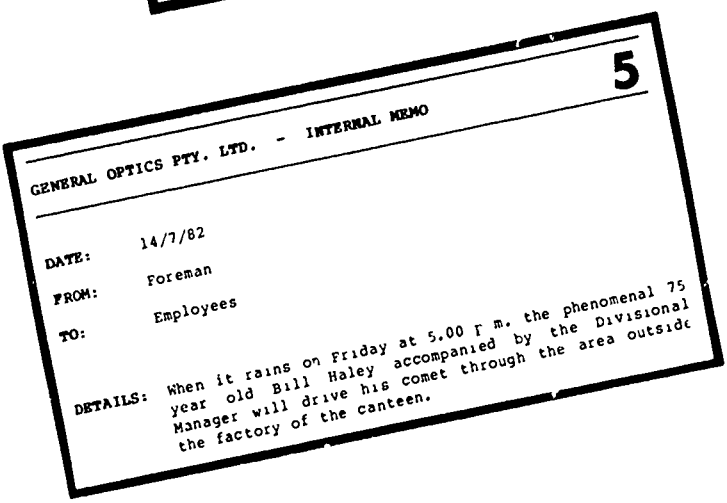
4

DATE: 14/7/82

FROM: Personnel Officer

TO: Foreman

DETAILS: On Friday at 5.00 p.m. The Divisional General Manager will appear in the canteen with Halleys Comet, something which happens every 75 years if it rains. The Divisional General Manager will order the comet into the area outside the factory.



GENERAL OPTICS PTY. LTD. - INTERNAL MEMO

5

DATE: 14/7/82

FROM: Foreman

TO: Employees

DETAILS: When it rains on Friday at 5.00 p.m. the phenomenal 75 year old Bill Haley accompanied by the Divisional Manager will drive his comet through the area outside the factory of the canteen.

OHP 1

A S S I M I L A T I O N

THE RECEIVER TAKES MUCH OF THE MESSAGE INTO HIS/HER OWN UNIQUE FRAME OF REFERENCE AND PERSONALITY; THUS THE RECEIVER'S INTERPRETATIONS AND MEMORIES OF WHAT HE/SHE HEARD ARE AFFECTED BY HIS/HER OWN THOUGHTS AND FEELINGS.

1) CHANGE THE UNFAMILIAR TO SOME KNOWN CONTEXT

2) LEAVE OUT MATERIAL THAT SEEMS IRRELEVANT

BY

3) SUBSTITUTING MATERIAL THAT GIVES MEANING WITHIN A PERSON'S OWN FRAME OF REFERENCE

L E V E L L I N G

THE RECEIVER TENDS TO REDUCE THE AMOUNT OF INFORMATION HE/SHE RECEIVES

BY

REMEMBERING MUCH LESS OF THE MESSAGE THAN WAS PRESENTED BY THE SENDER

THE MESSAGE TENDS TO:

1) GROW SHORTER

2) MORE CONCISE

3) MORE EASILY GRASPED AND TOLD

FEWER WORDS ARE USED

FEWER DETAILS ARE MENTIONED

S H A R P E N I N G

RECEIVER SHARPENS CERTAIN PARTS OF THE INFORMATION SO THAT

1) A FEW HIGH POINTS ARE READILY REMEMBERED

BUT

2) MOST OF THE MESSAGE IS FORGOTTEN

SHARPENING IS SELECTIVELY RETAINING, PERCEIVING, AND REPORTING A LIMITED NUMBER OF DETAILS FROM A LARGE CONTEXT

IT IS THE RECIPROCAL OF LEVELLING

(ONE CANNOT EXIST WITHOUT THE OTHER)

7.6 SUMMARY

When teaching large groups, structure your presentation carefully and explain the structure to your students. Explain the purpose of the lesson and show how it fits into the whole subject. Use notes only as a reminder; never dictate them, instead use handouts if it is important to transmit information. Always use a variety of teaching techniques in a lesson, use audio-visual aids correctly, speak clearly and avoid nervous mannerisms. Finally, evaluate how your class is responding to your teaching and modify your behaviour, if you find that necessary.

CHAPTER EIGHT: TEACHING SMALL GROUPS (D. THEW)

8. PURPOSE OF THIS CHAPTER

Teaching small groups requires a somewhat different approach to that often adopted for large groups. In the lecture presentation which is frequently used with large groups the teacher tells the class what he or she knows. Group teaching on the other hand encourages the students to become active in their own further education. The teacher draws from the group what they know; that is, he/she makes them provide most of the information. In group teaching, active participation is required from the student. This technique contrasts with the rather passive situation that occurs in the lecture where the role of the teacher is that of expert or formal authority with the student endeavouring to grasp instruction by spending most of the time listening, watching, reading and writing.

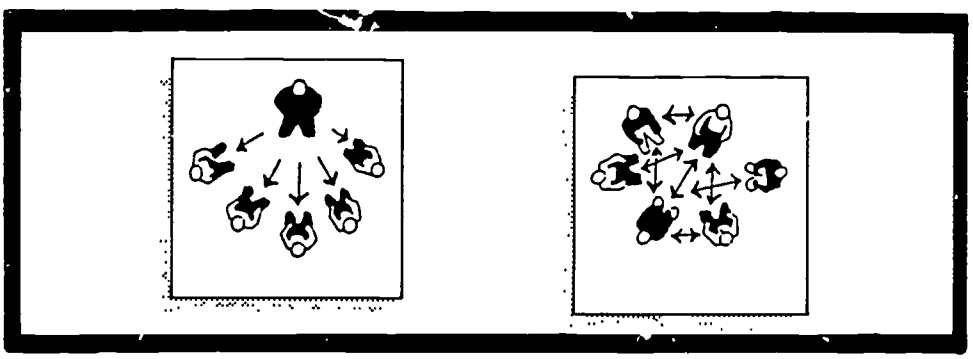


Figure 8.1 Two types of group

The decision to use group methods will depend on the nature of the task or problem as well as the range of knowledge, intelligence or experience available in the group. On tasks such as mathematics which require concentrated individual attention with only one right answer, individual solutions may be accomplished more quickly than group ones. However, on any subject where there might be any number of solutions, a group of people produces a far more varied and stimulating range of ideas than one individual. The co-operative group may even become a powerful force for encouraging individuals to accomplishments they could never have managed on their own. In terms of teaching, many students who have battled on their own with a subject or topic can draw new strength from a group.

The purpose of this chapter is to describe how to organise, prepare for, and teach small groups of students in the classroom setting. The chapter is divided as follows:

After reading the chapter you should be able to prepare for and teach classes making use of group participation methods. Your understanding of and skill in handling the various types of small groups it may be possible to form in your classroom will add interest, stimulation and variety to your lesson presentations and improve the efficiency of the teaching and learning.

8.1 ADVANTAGES OF SMALL GROUP TEACHING

Small group teaching allows for more liberal communication between teacher and students and among students themselves. Through these patterns of activity, the teacher comes to know students more effectively, particularly their differences in knowledge, experience and attitudes. The main strengths of small group work are:

1. groups possess more resources than individuals;
2. small group techniques will enable students to capitalise on the varied experience of their fellows;
3. group members are often stimulated by the presence of others to make worthwhile contributions and help the group succeed;
4. groups may produce higher quality decisions through the clarification, refining and evaluation of ideas by the members' interaction;
5. group members (the students) may display greater commitment if they have been directly involved jointly in the planning, discussion and resolution of the problem;
6. also through group interaction the student may achieve greater personal and social awareness through gaining insight into the attitudes, reactions, and sensitivities of others and through this may be motivated to re-examine his or her own.

Additionally, some course aims (such as learning skills of working co-operatively) can only be achieved in small groups.

In group work the teacher's role must be carried out subtly and unobtrusively to prevent small group activities becoming too time-consuming, to see that some students do not dominate the discussion at the expense of others, or to curb any undesirable attitudes displayed by popular class members. On occasions, the teacher must promote, direct or control the discussion, but always in such a way that the students still perceive it as belonging to them.

8.2 TYPES OF SMALL GROUPS

The following charts, indicating eight kinds of classroom groups, stress active student participation with its essential component—learning by doing. Each type is described and preparation/procedures for its use are shown, together with its perceived advantages and disadvantages (see Table 8.1).

8.3 TECHNIQUES OF SMALL GROUP TEACHING

Small group teaching may occupy a part or all of the lecture or teaching period. Aims that can be achieved by using group methods are as follows: Students can be assisted to discuss and to clarify difficulties stemming from lectures or other teaching sessions. Teachers can achieve closer and more personal contact with students than is possible in lectures. Group work promotes critical and logical thinking. It serves as an aid to students in solving problems and applying theory to practice. It provides opportunities for practice in the oral presentation of reports. Students' work, e.g. essays, designs, plans, experimental results etc., may be discussed. Group work can also

- facilitate consolidation of work already covered as well as revision and preparation for examinations,
- act as a means of ensuring that principles and concepts are understood,
- extend studies to topics beyond those dealt with in lectures,
- provide feedback to staff on students' progress and attitudes as well as on the effectiveness of their own teaching.

TYPE OF SMALL GROUP	DESCRIPTION	METHOD	SOME ADVANTAGES	SOME DISADVANTAGES
GROUP DISCUSSION	Allows for the pooling of knowledge experience and ideas in the joint exploration with your students of a problem situation e.g. Theory Lecture on a New Topic i.e. new materials/processes-Laminated Shape work (Cabinet Making)	PREPARATION: Development of discussion format and production of focus questions and problems PROCEDURES: Teacher encourages all students to participate by guiding the discussion Teacher and students must be clear about the focus and the aim of the discussion so that all share the responsibility for making the exercise worthwhile	Stimulates students to think Tends to produce an informal situation in which learning is facilitated More effective in the development of attitudes since each student tends to have a strong desire to gain the respect of the group. Students participate actively Personal contact between teacher and student with individual attention possible	Use limited to size of group Becomes disorganised if format is not carefully planned and focus questions used Possible domination by the teacher or persistent student-talker Time consuming Discussion may meander
BUZZ GROUPS	Opportunity for small groups (even just 2 students) to participate intensively followed by discussion of the total group e.g. Discuss the services (i.e. prepare work) on a drawing (Architectural Draft)	PREPARATION/PROCEDURE: One or two questions on the topic are given to each group comprising 2 to 6 students. A student recorder is chosen to present pertinent ideas from the discussion	An effective technique to secure participation from every individual in the group Can be readily used with other group methods	Consideration must be given to the purpose and structure of groups
BRAIN-STORMING	The group is given a problem and asked to suggest possible solutions in a given time - with no 'on the spot' evaluation of ideas as they are presented. An exercise in creative thinking in which the students literally storm a problem with their brains e.g. Design Evaluation in Cabinet Making	PREPARATION: Teacher and/or students select appropriate problems or questions on the topic selected by the teacher and for the class PROCEDURE: The teacher explains the meaning of 'brainstorming' and the necessary rules: Quantity of ideas wanted— the more ideas the better the chance of good ones. If you can improve on someone else's ideas, so much the better. The wilder the idea, the better. Recorder lists the ideas. Follow-up: List is circulated, criticisms applied and list is refined	Releases individual potential to produce ideas Creative thinking - new ideas possible Stimulates imagination and overcomes inhibitions in groups particularly where status and organisation are overriding considerations	Should be used as only an intermediate or partial step in classroom activity

TABLE 8.1 Types of small groups

TABLE 8.1 Types of small groups (cont'd)

TYPE OF SMALL GROUP	DESCRIPTION	METHOD	SOME ADVANTAGES	SOME DISADVANTAGES
THE CASE STUDY	Makes use of written or recorded anecdotes and video tapes or films or a combination of these about specific problem situations on the job e.g. Safety lectures - safe and unsafe procedures	PREPARATION/PROCEDURE: The group or groups are asked to study the case, discuss all pertinent aspects and suggest one or more solutions to the problem	To stimulate an analytical approach to solving problems rather than to discover a simple correct answer Draws on a real-life example	The case study can be made too protracted and elaborately documented
ROLE PLAY	Improvising roles and situations. May take the Case Study a stage further in acting out and improvising roles and situations using information obtained from the case study material e.g. Quality Control Officer's Role Job Applicant's Role Communications Role	PREPARATION/PROCEDURE: Each participant needs precise information on his role Written assignment sheet or oral briefing may be used	Effective in giving students a better understanding of the effects of behaviour and emotions of others in similar situations Helps some to better understand their own behaviour	Some participants find it difficult to become deeply involved
SIMULATION	An extension of Role Play often sustained over a longer period of time using fairly elaborate printed, filmed or recorded material; the simulating of real life situations	PREPARATION/PROCEDURE: As above with more elaborate resource materials plus the possible addition of fresh problems and complications from time to time by the teacher	Simulating the real world As for Case Study and Role Play	As above
"GAMES"	Any one of the above three- Case Study/Role Play/Simulation - becomes an academic game if it is "played" by competing teams/groups or individuals who are awarded points on the basis of moves or decisions made e.g. Revision	PREPARATION/PROCEDURE: As above plus the organisation of a competition on the basis of teams or individuals Point-score to be recorded	As for the Case Study Role Play and Simulation Additional motivation and group spirit/morale through competition	As above

A further type of small group is the 'SPECIAL INTEREST/SPECIAL TALENTS GROUP'. This group occurs when you have a class whose members show marked differences in the extent and depth of their knowledge, experience and interests but not enough to require a permanent division into sections. The technique to overcome this difficulty is to give a lesson to the whole class and then to divide the students into two or more groups to work on graded exercises of different levels of difficulty which the teacher has prepared. These groups may be used for remedial purposes, enrichment or extension, or in providing for group preferences. E.g. enrichment is exemplified when one group gets involved with 'carved work' in making furniture while another group could be working on 'the insertion of cane in chairs'.

Planning and preparation

Any group activity will be facilitated if it occurs in a free-flowing, friendly group atmosphere with the teacher relinquishing the dominant role for that of the skilful yet unobtrusive guide/mentor. Planning and preparation are vital ingredients. The choice of task, activity, issue, problem, discussion topic, and so on, may be the teacher's, it may be shared by teacher and students, or it may be decided by the students themselves. Factors which need to be considered are student needs and interests, competence of students, and significance of the task. The task should be one which demands varying levels of thinking by students and which promotes their learning and understanding. For example, in a small group discussion, a number of focus questions should be prepared in advance.

Group size

The group should be small enough to provide for ready informal participation of students and large enough to present a range of resources and stimulation to its members. A suggested size might rarge from about three students up to twelve. In a class of twenty for instance, four groups could be formed, each comprising five students.

Group arrangement

Seating arrangements for the group are important in fostering attention and encouraging participation. Students should be seated in a circle, semi-circle, hollow square, rectangle or triangle. Eye contact is significant. On occasions, it may be feasible for the group to be seated informally on the carpet, cushions or even outdoors on the lawn. While recognisably part of the group, the teacher should not be sited in a dominant position, as this could deter members of the group from interacting with each other, and encourage them to expect the teacher to ask all the questions and make all the responses. Where a number of small groups are in operation at the one time, the teacher should move from one to the other, spending equal amounts of time with each group as far as possible.

Skills needed for teaching small groups

Four interrelated clusters of skills are useful here (Thew, 1971):

1. interpersonal skills;
2. organisational skills;
3. guidance and facilitating skills;
4. curriculum skills.

They are not intended to be mutually exclusive but should be used in an integrated fashion.

Interpersonal skills include the display of warmth, sensitivity, listening to and responding to student ideas, establishing rapport, etc., **organisational skills** incorporate arranging for appropriate groupings of students, orienting them to the task or tasks and providing or making reference to resources. These skills involve the teacher in determining the kind and direction of small group work desirable, e.g. group discussion, buzz groups or brainstorming, etc. The teacher needs to be able to deal with many individuals and groups in a very specific way. The culmination could be the hearing of progress or final reports or the sharing of experiences by all the students. The session could be brought to a close by summing up the particular learning activity. The clusters of skills detailed in Table 8.2 ensure that the students function purposefully and smoothly in an effective environment and with accountability.

TABLE 8.2 Skill clusters for small groups

1. Interpersonal Skills	2. Organisational Skills
Displaying warmth	Orienting
Sensitivity	Diversifying
Listening	Arranging
Responding	Co-ordinating
Establishing rapport	Split-attention
Supporting	Culminating
Helping	Closure
Accepting feelings	
Handling emotions	

2. Guidance and Facilitating Skills	4. Curriculum Skills
Reinforcement	Goal setting
Operational supervision	Determining behavioural outcomes
Interaction	Planning activities
Tutoring	Consultant
Participating	Curriculum counselling
Being a discussion leader	Evaluating
Catalyst for thinking	
Integrating supervision	

Guidance and facilitating skills emphasise both operational and developmental supervision. Operational supervision refers to the teacher's mobility to all groups to start the students on the tasks with precise objectives in mind; developmental supervision involves the teacher circulating as a resource person offering advice, interaction and assistance once the groups are under way. **Curriculum skills** focus on the functioning and achievement of the group towards the accomplishment of the task, with the most important curriculum skill for the teacher being that of assisting the group to evaluate its own progress.

One suggested approach for teaching small groups

(Pre-lesson planning needs to consider

- focus questions/activities
- group size
- group arrangement.)

Step 1: Opening (Set the stage)

- Explain or discuss the nature of the task to be investigated, completed, discussed, etc., at the same time, arouse interest so task experienced by students is worthwhile;
- Specify the method to be used, i.e. group discussion, buzz groups, role play, etc.

Ensure that the aim is to learn by experience and that no one will be penalised for trying out ideas and/or human relations behaviour.

Step 2

Pose questions/activities which will focus students' attention on meaningful aspects of the task to bring about whatever learning, consolidation and/or retention the teacher aims to achieve with students.

Step 3

The group or groups get under way. The teacher should be ready to inject a question or reveal another facet of the task or problem, being careful to maintain free and open discussion/exploration of the problem. Keep things going by giving credit where appropriate, by suggesting a brief review of progress concerning the task/discussion, etc., or by asking questions if individuals need to be brought back to a consideration of the task in hand.

Step 4

Be a good listener. Do not become emotionally involved in the situation or talk too much. The teacher's role is to draw out the thoughts, ideas, feelings, etc. of the group. Endeavour to retrieve something out of whatever is contributed.

Step 5

Culmination and closure. Summarise the contributions to the task. Clarify misconceptions. This may be done on the chalk/white board or by using the overhead projector. Verbal comments, discussion and conclusion. Be sure the students all have a relevant record of key points and that some kind of follow-up activity is organised. For example, in cabinetmaking, discussion of design evaluation could be followed by the production of a piece of furniture to demonstrate certain points.

Note: Where several small groups are operating at the same time, steps 3 and 4 will be carried out with each group separately. For Step 5, the various groups should come together as a whole for the culmination (or plenary session) so that the different groups can see and hear how the others have tackled the task, and so on.

Helpful hints

- One way to cope with students who persist in talking in class is to rearrange the group on some pretext so that such students are seated next to each other, or, on either side of the teacher. It may also be useful to seat them opposite the least talkative student, as individuals tend to talk to those they can readily see rather than to their immediate neighbour.
- If this fails, thank the persistent speaker for his or her contribution and immediately call upon other individuals in the group for their views.
- If all of the above techniques fail, 'invite' the persistent speaker to be the recorder for the group.
- Silent group members may be encouraged to become involved by arranging occasional pauses for a 'buzz' session in which adjacent students discuss relevant aspects of the task at greater depth.
- If a student makes a poor suggestion after genuine effort, the teacher's handling of it should be constructive with the aim of encouraging the student to keep trying.
- Passiveness or inactivity on the part of students may be due to the organisation of the group or to the teacher's attitude. The teacher's aim should be to inspire confidence and involve students by questioning and/or positive reinforcement (i.e. praising them for their contribution).

Uses of group discussion

One important aspect of small group work is group discussion which provides opportunities for presenting different points of view, developing communication skills and examining issues. Skilfully used, it provides an informal means of gauging student knowledge and attitudes. Group discussion may be employed

- to create interest because the students participate and are challenged to think;
- to extract from individual students points of view that help the whole class understand the lesson material;
- to give the teacher valuable feedback concerning the progress and capability of individual students in the group;
- to pinpoint misconceptions and give the teacher an opportunity to correct them and to strengthen the teaching;
- to help the students and the teacher to know one another;
- in a lesson introduction to focus attention on the new material and the need for knowing it. Start a discussion on what has been learned so far and then gradually build on this by developing the new material. Remember, we all learn new things in the light of our past experience;
- to summarise a lesson or part thereof;
- to tie up facts, principles and processes taught in several lessons. The teacher's leading questions will provide the students with the chance to grasp the full meaning of, and to place in proper perspective, facts and principles taught previously.

Errors to avoid

Among errors to avoid are:

- attempting to hold discussion on topics in which students are not interested or have insufficient background;
- monopolising the situation by asking too many questions and giving too many answers;
- allowing individual students to dominate the discussion;
- ignoring the inactive members of the group;
- permitting the discussion to wander aimlessly;
- letting the discussion be sidetracked by either 'red herrings' or the introduction of irrelevancies;
- rushing things, hurrying discussion, tending to fill in awkward silences with 'teacher talk', consequently not giving students sufficient time to think and carefully structure their responses;
- failing to use 'focus' and 'probing' questions, e.g. for clarification and justification;
- overlooking the use of a group recorder to jot down main points, issues, etc.;
- neglecting to crystallise the discussion by means of progressive summary.

8.4 GROUP DEVELOPMENT

Group development and group leadership demand thought, skill and practice. The following attributes will prove very helpful to the teacher/group leader:

- an ability to think quickly,
- an understanding of group dynamics (e.g. the behaviour of groups),
- an awareness of group pressure,
- self restraint and respect for others,
- an ability to crystallise the statements forthcoming from the group,
- an ability to verbalise the feelings of the group.

Group dynamics is the area of social psychology which considers the nature of group life with the objective of improving group effectiveness. In the following table produced by Johnson and Johnson (1982) various aspects of group effectiveness are summarised and are a useful guide to teachers in group development and group management.

Small groups may be formed in many ways. One example has already been instanced in Chapter 7 where it is suggested a large lecture group can readily and quite naturally be broken down into clusters of three to five people when students turn around to face each other. Another example is allowing the students to choose the group/person with whom they would most like to work. Yet another way to form groups is for the teacher to set them up according to some predetermined criteria.

The teachers, while keen to foster greater group participation, may experience some sources of difficulty. These can include their personality, as reflected in the extent to which they are able to withdraw from centre stage; the size of the group; pressures from industry, commerce and/or the community reflecting attitudes, such as 'What do students know to enable them to take much real part in things?' Students can present problems by preferring a lecture to group work because it makes fewer demands on them, or when they are shy or unused to a group where everyone is expected to participate. Teaching and learning is not a simple situation; each group and each teacher possess certain unique qualities.

COMPARISON OF EFFECTIVE AND INEFFECTIVE GROUPS

EFFECTIVE GROUPS	INEFFECTIVE GROUPS
Goals are clarified and changed so that the best possible match between individual goals and the group's goals may be achieved; goals are co-operatively structured.	Members accept imposed goals; goals are competitively structured.
Communication is two-way, and the open and accurate expression of both ideas and feelings is emphasized.	Communication is one-way and only ideas are expressed; feelings are suppressed or ignored.
Participation and leadership are distributed among all group members; goal accomplishment, internal maintenance, and developmental change are underscored.	Leadership is delegated and based upon authority; membership participation is unequal, with high-authority members dominating; only goal accomplishment is emphasized.
Ability and information determine influence and power; contracts are built to make sure individual goals and needs are fulfilled; power is equalized and shared.	Position determines influence and power; power is concentrated in the authority positions; obedience to authority is the rule.
Decision-making procedures are matched with the situation; different methods are used at different times; consensus is sought for important decisions; involvement and group discussions are encouraged.	Decisions are always made by the highest authority; there is little group discussion; members' involvement is minimal.
Controversy and conflict are seen as a positive key to members' involvement, the quality and originality of decisions, and the continuance of the group in good working condition.	Controversy and conflict are ignored, denied, avoided, or suppressed.
Interpersonal, group, and intergroup behaviour are stressed; cohesion is advanced through high levels of inclusion, affection, acceptance, support, and trust. Individuality is endorsed.	The functions performed by members are emphasized; cohesion is ignored and members are controlled by force. Rigid conformity is promoted.
Problem-solving adequacy is high.	Problem-solving adequacy is low.
Members evaluate the effectiveness of the group and decide how to improve its functioning; goal accomplishment, internal maintenance, and development are all considered important.	The highest authority evaluates the group's effectiveness and decides how goal accomplishment may be improved; internal maintenance and development are ignored as much as possible; stability is affirmed.
Interpersonal effectiveness, self-actualization, and innovation are encouraged.	'Organizational persons' who desire order, stability, and structure are encouraged.

Nevertheless, it is possible to identify some characteristics which are important in teacher effectiveness and which can be modelled by the new teacher, namely, a warm personality, capable of demonstrating approval and acceptance of students; the social skill to weld a group together; a teaching style which provides for and makes use of student ideas; conscientiousness and efficiency in preparing lessons and running the class; ability to diagnose and remedy student difficulties; and an enthusiasm reflected in personal dynamism, varied voice inflection and abundant eye contact with students.

8.5 SUMMARY

Teaching small groups demands a special approach. Your role is to get everyone actively involved in an effective and constructive learning situation.

If the teacher is to facilitate learning, then organisational and guidance skills such as those involved in dealing with people (the interpersonal) need to be acquired. Thought needs to be given to group size and group arrangement. Even though the teacher does less talking than would be done in other types of teaching, this does not suggest less planning and preparation. Careful preparation is needed to set the stage and guide the group activity without being too obvious about it and to conclude the session with an adequate summary and a feeling of accomplishment on the part of the students. Skilful use of questioning and prudent treatment of student responses are particularly important.

REFERENCES

Johnson, D., & Johnson, I. (1982). Joining together. New Jersey: Appleton.

Thew, D. M. (1971). Guiding small group teaching and individualised instruction: Sydney micro-skills. Sydney: Sydney University Press.

CHAPTER NINE: IMPORTANCE OF QUESTIONING AS A TECHNIQUE (D. THEW)

> As a machinist turns a piece of metal in the lathe he listens to the sound made by the cutting action and watches the color and shape of the chips as well as the degree of smoothness behind the tool bit. Through practice he has learned to interpret these signs and to judge, with reasonable accuracy, how well the machine is working. The skilled instructor does something very similar. As he teaches he watches the expressions on the faces of his students and analyzes their questions and other indications of attention and understanding. (Rose, 1973, p.120)

9. PURPOSE OF THIS CHAPTER

Questions are probably the best means of guiding small groups and in the general class situation (theory or practical) of gaining feedback from students. This chapter presents practical suggestions for teachers in choosing and using appropriate questioning techniques. The chapter is divided as follows:

Questions are essential teaching tools. Their thoughtful and skilful use is an important and integral part of any teacher's professional equipment.

9.1 WHY USE QUESTIONS?

Challenging and purposeful questions will focus attention on the information to be considered and discussed. In teaching small groups and classes generally, the teacher needs to know how effective the instruction is and what should be done next. Students also need to know how effectively they are learning. Questioning is an excellent means of gaining feedback for both teacher and student. This skill needs to be given the utmost priority and practice in its development as it is often the chief

means of interaction between teacher and student. Each question should have a precise purpose. Always take care to treat all student contributions with respect if you wish to sustain rapport with your class.

The emphasis throughout the chapter is upon using questions not only to aid student achievement of knowledge and level of understanding but to assist in the building of student self-esteem and creativity.

Questions are used to:

- establish pre-knowledge
- create and sustain interest
- enforce recall (overlearning)*
- assist retention (overlearning)*
- check quantity of information retained
- evaluate quality of retention and understanding
- achieve feedback from students
- encourage discussion (active learning)**
- involve learners (active learning)**
- stimulate learners
- revise
- clarify relationships.

Remember: Questioning is vital to the learning process. The technique of questioning enables you, the teacher, to keep in touch with what your students are thinking.

9.2 TYPES OF QUESTIONS

Types of teachers' questions directed to individual students may be classified as:

- general enquiry questions: these are used in the introduction to a lesson or group activity in order to sharpen interest and gain attention to the task. For example in a lesson on 'Constructing Shaped Drawers' (Cabinet Making), the teacher showed students a photograph of a shaped drawer front and asks: 'Having a knowledge of making flat drawer fronts, how would you go about making shaped fronts? Give me some examples. (Answer: cut-out of solid timber; shaped plywood; built up.) This then led into the lesson which dealt with these three approaches.

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* Overlearning = Student practises beyond the criterion of one single reputation.

** Active learning = Student makes active observable responses.

- testing questions: these are asked after a step or unit in the lesson or group activity to check student understanding. Testing questions are useful also in providing progressive summaries, e.g. 'What has to be done to the shaped drawer front fitting inside the cabinet carcase to use traditional jointing methods, i.e. squared off, checked in, etc.?'

- leading questions: these are employed at any stage to lead students to discover certain theories, facts, relationships, and so on, for themselves. For example, 'Having a knowledge of the shaped drawer front and jointing methods what would have to be done to the drawer front if the drawer was to go over the cabinet carcase?'

- relayed questions: ask a question—obtain an answer—refer it (relay it) to another student for comment.

  Use this method to involve the group, to encourage discussion, to avoid appearing to be critical. A variation of this is to relay a student's question to you back to the class. This can be an effective defensive or evasive ploy!

  A variation of this type of question is to relay a critical statement from a student to the class, for example:

  Student: 'I think this session is a waste of time!'
  Teacher: 'What do you think, Mr/Ms Brown?'

  Thus, you avoid taking a stand from which you cannot retreat!

- open-ended questions: these questions ask for an opinion. They are extremely useful to 'loosen-up' the class, particularly where they may feel they do not have sufficient knowledge to provide adequate answers or where they may sense possible embarrassment. They lead to discussion or enable you indirectly to see if the student understands the reason for something. For example, 'What do you think about . . .?' or 'What is your opinion of . . .?'

In the final analysis, questions are only as good as the answers they create.

9.3 IMPROVING YOUR QUESTIONING TECHNIQUE

Four skills need to be developed and practised to improve questioning technique:

- phrasing your questions: in order to achieve clear coherent questions early in teaching it is wise to write down the actual questions in your lesson plan, together with the anticipated responses.

  Use questions that include the words: why, when, who, what, where and how. Other key words might include: explain, outline, define, compare, illustrate and trace. Avoid questions that can be answered by 'yes' or 'no'. This encourages 'guessing'. If this situation arises, always follow up with 'Why?' to oblige the student to enlarge on his/her answer. Also, avoid ambiguity in the wording of your questions.

- pacing your questions: frequently, new TAFE teachers find themselves asking questions but receiving few answers. Their failure to obtain responses is often brought about by not pausing and by not varying the delivery of their questions. Immediately you ask a question, PAUSE, and look around the class ('the roving eye') before nominating a particular student so that the class or group feel that any one of them could be called upon to respond. Non-verbal cues will often indicate readiness, here, e.g. the student may lean forward slightly to try to catch your eye, begin to open his mouth, raise the head, or open the eyes wider. A brief pause suggests prompt answers while a longer pause (more than three seconds) signals that you are expecting the students to think carefully before responding.

- directing your questions: avoid chorus answers, distribute your questions over as wide a range of students as possible, not just to the student who attracts your attention or who sits in the front seat. Be ready to re-direct the question to another student by name. This will help to keep the students alert.

- prompting and probing questions: prompting followed by encouragement can help students gain confidence in providing answers. Probing questions sharpen students' thinking causing them to think more deeply about their first answer and to express themselves more precisely, thereby developing communication skills and critical awareness.

When you feel comfortable handling these four skills, consider the LEVEL of knowledge or thinking being triggered by the questions. In developing and practising questioning skills it is essential to differentiate between questions testing knowledge and those intended to create knowledge. In the first category, start with questions testing recall what has been taught, seen or read; then move to comprehension, i.e. understanding what has been recalled: next, application, i.e. applying rules and techniques to solve problems that have single correct solutions. The ultimate level in terms of intellectual power is evaluation, which calls upon a student to evaluate an idea, a process, a technique, a solution to a problem, and so on, and to exercise his/her powers of judgment.

Teachers should develop a repertoire of questioning skills in order to stimulate interesting discussions and productive thinking. When the teacher has decided on the type and level of thinking required of the students, skilful questioning can channel students' thinking in the desired direction.

Bearing in mind the above suggestions, experience over many years with a variety of classes indicates the following questioning procedure to be worthwhile. Step 1: Ask the question; Step 2: Pause so that all students have the opportunity to think of an answer; Step 3: Call on one student by name; Step 4: Listen to the student's answer (and encourage all the other students to listen as well and comment if necessary); Step 5: Emphasise the correct response.

9.4 THE TREATMENT OF STUDENT ANSWERS

The way a teacher handles student answers may well be as important as the questions asked. Student answers to factual questions may be broadly classified as: correct, partially correct, incorrect, or no answer at all. In the first two categories, positive reinforcement is important such as the usual 'Right!' 'Good!' etc. Incorrect answers should be handled diplomatically, without being punitive or belligerent, while redirecting the level and/or direction of thinking. Where no answer is forthcoming, the alert teacher rephrases the question on a simpler level; if this fails, the teacher should present further information by telling, explaining, demonstrating, using a video film, slides, overhead projector transparencies, the chalk/white board, students' text books, previous assignments, etc., and then ask the original question again.

9.5 SUMMARY

In conclusion the following advice is offered:

- make use of the 'pregnant pause' when asking questions;
- if a student's answer is not audible to the total group, don't repeat the answer. Ask the student to repeat it more loudly;
- if an answer is incorrect, indicate this and present it in a different or clearer way, breaking it down to secure the right answer. Try to avoid saying or even implying 'You're wrong! You're a fool!';
- if you receive a deluge of replies, indicate your appreciation but lay ground rules for answering—for example, you select and name the answerer;
- use direct questions on most occasions as they create involvement on the part of students; and finally
- don't look at any one person when asking a question and then ask that person. Develop habit of looking around the group (the 'roving eye') so that all students are encouraged to think about the possible answer.

REFERENCES

Capin, A. A., & Sund, R. B. (1971). Developing questioning techniques. Columbus, Ohio: Charles E. Merrill.

Rose, H. C. (1973). The Instructor and his job. Chicago, Illinois: American Technical Society.

CHAPTER TEN: TEACHING INDIVIDUALS (M. TENNANT)

10. PURPOSE OF THIS CHAPTER

In common with many TAFE teachers, you will probably spend much of your time teaching groups of students. Initially, the students may appear to be quite similar to one another and you only notice readily observable differences such as sex, height, physique, age, and perhaps ethnicity. Gradually, as you become more familiar with students, their individual characteristics become apparent: there will be differences in things such as personality, interests, attitudes towards learning, family background, aptitude and learning style. Quite clearly not all of these differences are relevant to teaching and learning, but many of them are important, and you need to develop a range of teaching techniques and strategies which cater for them.

Given that an average TAFE class consists of students who differ in a variety of ways, how can you take this into account? There appear to be three broad options available:

- Design classroom activities which allow supervision of individual students and develop effective supervisory skills.
- Create an individualised program where students work at their own pace, alone or in small groups, and only come together briefly as a total group.
- Work predominantly with the whole group, but vary your teaching style so that at different times you 'connect' with different learners in the group.

In this chapter the first two of the above options are illustrated and explained in more detail. The third option has been covered in Chapter 7.

There are numerous advantages, from the students' point of view, in individual teaching. Ultimately, it is only the individual student who learns, and individual teaching (in all its forms) recognises the unique qualities of the individual learner. Individual teaching can: correct misunderstandings, correct performance errors, answer questions, provide personalised explanations, provide emotional support, cater for interests, allow for differences in ability and speed of learning, recognise individual experience, adapt to styles of learning and promote a sense of control and ownership of the material being learned.

Individual teaching can be used as the principal method of instruction in a lesson, or it can be used to 'fine tune' group instruction to fit individual characteristics and needs. The chapter is divided as follows:

10.1 SUPERVISING INDIVIDUAL STUDENTS

Perhaps the most widely used method of catering for individual differences in TAFE is supervising individual students. Most commonly, the teacher provides an initial explanation or demonstration which is then followed by a set exercise (e.g. solving a problem or practising a skill). The teacher assists individual students, diagnoses any learning difficulties, clarifies misunderstandings, identifies weaknesses in the initial explanation, re-explains where necessary, and provides encouragement and support. To do this effectively the teacher needs to establish a good relationship with the students and develop strategies for responding to their individual characteristics.

Building a good relationship: Individual personalities

A distinguishing feature of teaching individuals is the dialogue which occurs. There is scope for some dialogue in a large group, but the dialogue is public and therefore strongly influenced by the dynamics of the group. Rogers (1983), a clinical psychologist, provides us with some insight into the qualities of a good superviser (or, as he calls it, a good 'facilitator') of learning:

- **realness and genuineness:**

  When the facilitator is a real person, being what she is, entering into a relationship with the learner without presenting a front or facade, she is much more likely to be effective . . . It means that she is being herself, not denying herself. (pp. 121-22)

- **prizing, acceptance and trust:**

  I think of it as prizing the learner, prizing her feelings, her opinions, her person. It is a caring for the learner, but a non-possessive caring. It is an acceptance of this other individual as a separate person, having worth in her own right. It is a basic trust - a belief that this other person is somehow fundamentally trustworthy. (p. 124)

- **empathic understanding:**

  > . . . the ability to understand the student's reactions from the inside . . . a sensitive awareness of the way the process of education and learning seem to the student. (p. 129)

Thus the abilities and qualities of a good 'facilitator' go beyond being able to explain something clearly. Teachers need to establish a good classroom atmosphere prior to individual teaching. Conversely, a teacher's relationship with the class as a group is extended and maintained through fostering individual relationships.

Rogers is primarily concerned with the attitude of the teacher towards the student. Argyle (1977, p. 144) places this in context by outlining three key dimensions of supervisory behaviour:

- initiating structure: the ability to explain the task, motivate the group, make sure the equipment and materials are available, and provide sufficient information to complete the task. In most TAFE lessons this constitutes the introductory part of the lesson where the teacher establishes the need to know, provides an overview of the lesson, outlines the material and equipment to be used, and provides a brief explanation or demonstration;

- consideration: understanding the particular needs of students, establishing a warm and supportive relationship, taking a personal interest in individuals, and dealing with the social and emotional problems of individuals. The TAFE teacher is often the first person the student approaches with a personal problem—whether it be related to family abuse, sex, alcohol, drugs, depression, or the need to help another. There are, of course, limits to what a TAFE teacher can do without professional training—but you should be prepared to listen and provide everyday advice;

- democratic—persuasive social skills: the ability to explain and persuade rather than give orders, to listen to students' views and allow them to participate in decision making. There are many instances in TAFE teaching where students will perceive the content of the lesson to be irrelevant. For example, a student in carpentry and joinery may object to learning about roof bevels on the grounds that his/her employer is never involved in roof construction. Naturally, the teacher will have some strong views about the general skills of a good carpenter—but these should not be forced on the student. Effective persuasion is, in the long run, a more economic and beneficial way of handling objections of this sort.

The above dimensions were obtained through research on working groups but they can be applied readily to teaching. They are all social and organisational skills which are relevant to both group and individual teaching. The social skills of 'supporter' and 'helper' are particularly relevant to teaching an individual—but what you say (or do) to help advise or influence a student will very much depend on the student's personality characteristics. This can be illustrated by considering a key psychological characteristic: self perception.

Self perception has three elements: the self concept (what you think you are), self esteem (how you feel about what you think you are) and the ideal self (what you would like to be). The relationship between these three aspects of self perception influences the way you diagnose problems and help individual students with their learning. Generally speaking, a person's self esteem is the product of a comparison between his/her ideal self and self concept; if they match, self esteem will be high, if they don't match, self esteem will be low.

In supporting and giving advice to students you can make comments and suggestions which are directed towards any of the above aspects of self perception, as the following scenarios demonstrate.

Scenario 1:	Unrealistically high self concept.
Student:	I'm sick of this, I could dismantle this engine with my eyes closed.
Teacher:	You can do the job okay, but sometimes your technique is poor.
Student:	Who cares about technique, it's only the result that matters.
Teacher:	The technique needs to be perfect if you want to progress to more complex tasks. Watch me do it once more - and then you will see where you can improve.

This is where students, without justification, believe they are sufficiently competent at a particular task, and have therefore lost interest in further practice. In such circumstances the teacher must provide the students with a more realistic assessment of their work. There are many options for the teacher: point out faults to the student, ask the student to observe a model of excellent work and make a comparison, invite the student's peers to assess the work, or ask an independent teacher to make a judgment about the work.

Scenario 2:	Unrealistically high ideal self and low self esteem.
Student:	This is my fifth attempt to produce the effect I want with this video - I just can't seem to get it right.
Teacher:	Remember, at this stage you're not expected to win a logie. In my view, your work is excellent.

This may occur when students produce good work, but remain dissatisfied with their performance. Such students require reassurance that they have achieved the required standard.

Scenario 3:	Low ideal self, high self esteem.
Student:	I don't see why I need to do these stupid calculations - we never do this kind of thing at work - we simply use a calculator.
Teacher:	It's important for you to understand what you are doing - only understanding allows you to improve and adapt to each new job. Let me give you an example . . .

This is where the task is perceived as irrelevant to a student's ideal self. Many students will deal with failure by denying the importance or worth of what they were trying to achieve. In this instance the teacher should be a good 'role' model and explain the importance and relevance of the work to the student.

Scenario 4:	Unrealistically low self concept.
Student:	I'm thinking of dropping this course, I've seen the work required in stage III and I'm just not capable of doing it - I'm struggling as it is.
Teacher:	Don't think about what you need to learn in two years' time. Take each step of the course as it comes. You have made great strides in the last few weeks, and I think you have the capacity to complete the course . . .

Students may deny they have the capacity to achieve a certain standard in spite of evidence to the contrary. Such students need assistance in appraising their own skills and capacities accurately.

In each of the above scenarios the teacher attempts to influence a student's self perception. Exactly what you say and how you say it will be determined by other moderating factors such as the student's motivation (status, need for achievement, self-fulfilment, belongingness, affiliation, etc). Unfortunately there are no ready-make formulae for advice and assistance to students, the best preparation is to be aware of the range of psychological characteristics, be a keen observer, and respond creatively and flexibly to each situation as it occurs.

Individual differences in learning style

Learning style or 'cognitive' style refers to the way people typically go about their learning. A number of learning style classifications exist, and one of the best known is the classification developed by Kolb et al, 1971. Figure 10.1 below illustrates the two intersecting dimensions used by Kolb to classify learning styles.

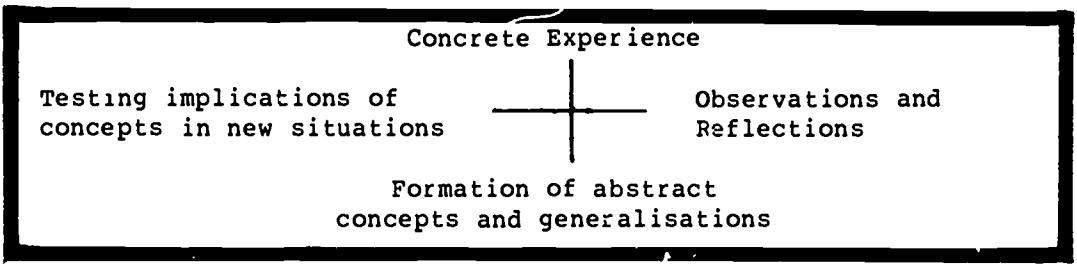


Figure 10.1 Dimensions used to classify learning styles (Kolb et al, 1971)

The vertical dimension ranges from 'hands on' concrete experience to a preference for theory and abstract concepts. The horizontal dimension ranges from observing and reflecting on experience to applying theories and concepts to make decisions or solve problems. The ideal learner can do all these things, but most learners prefer one pole of each dimension. Generally speaking it is desirable to match your teaching style with the learning styles of students. With group teaching, a mix of teaching strategies will normally cover each of the four 'poles' of learning Figure 10.1 (e.g. practice, excursions, theory classes, simulations, problem solving, demonstrations).

With individual teaching you need to be aware of the student's learning style and develop a repertoire of techniques for explaining and illustrating your subject matter. The strategies used to solve the 'problem' below illustrate the idea of learning styles and how to adjust for them. (You will be surprised at the different solutions people give to this problem.)

Problem: A customer gives a $20 note to a jeweller for a watch priced at $12. Because he is short of change, the jeweller changes the $20 note at a store next door. He gives the watch and $8.00 to the customer. Later the neighbouring storekeeper discovering the $20 bill to be counterfeit, returns it to the jeweller, who exchanges it for a genuine $20 bill. If the jeweller had a 100% mark up on the watch, how much did he actually lose in the transaction?

Strategies for solving the problem:

- Concrete experience: Some people will go through the actual exchanges outlined in the problem. They will, in effect, role play the customer, the jeweller and the storekeeper.
- Abstract concepts: This occurs when the solution is arrived at through a formula of some kind (e.g. let Y = income and E = expenditure).
- Testing implications: This style takes the abstract concepts and 'tests' them in a variety of settings before accepting their logic. In this instance, they will typically vary the 'amounts' in the problem to ensure that the formula is general enough.
- Observing and reflecting: This approach is detached from concrete experience or applied testing. The technique is normally to observe a range of solution strategies and eliminate those solutions which, on reflection, appear to be inadequate.

Imagine you had to 'teach' the solution to this problem. You could encourage the student to imagine each transaction (concrete experience), to observe others in their attempt to solve the problem (observation and reflection) to formulate concepts such as 'real money' (abstract conceptualisation) or you could supply them with a formula which could be 'applied' to the problem (testing implications). The general point about learning styles is that different people have different preferred styles of learning, most things can be learnt in more than one way, and most things can be taught in more than one way.

It was mentioned earlier that there are dimensions along which learning styles can be classified. Table 10.1 outlines the most important of these learning styles.

10.2 INDIVIDUALISED LEARNING PROGRAMMES

Individualised learning is not simply independent learning. Independent learners work alone, relying on their own resources. Individualised learning means working to an individualised prescription. Many aspects of teaching and learning can be individualised, Romiszowski (1984) identifies five aspects.

- Pace of study: Lectures and films do not allow for variations in the pace of learning. Programmed instruction and independent study do allow for individual pacing.
- Materials or media: A given teaching segment may have a variety of materials or media which achieve the same objectives.
- Methods of study: Students may have a choice in the method of instruction provided (e.g. expository lectures or discovery learning).
- Content of study: Students may be able to tailor the content of a course to fit their needs.
- Objectives of study: The objectives of a course may vary according to the needs or abilities of students.

A key feature of individualised learning is its flexibility and student centred approach. Moreover, this approach can be applied at a variety of levels - a course, a unit of a course, a lesson or a part of a lesson. There have been attempts to classify the variety of individualised learning techniques (Percival & Ellington, 1984; Romiszowski, 1984) but these classifications inevitably overlap, as do the principal techniques described below.

TABLE 10.1 Some common learning styles

Style	Description
Reflectivity/Impulsivity Kagan et al. (1966)	An impulsive learner seizes the first apparent solution to a problem. A reflective learner will weigh up the alternatives prior to making a commitment.
Focusers/Scanners Bruner et al. (1956)	Focusers concentrate on certain elements of a lesson whereas scanners attend to a broader range of elements and try to co-ordinate them into a total concept. . .
Serialists/Holists Pask and Scott (1971)	Serialists learn by building up their skills, adding one element after another. Holists learn by practising in 'chunks' and compiling the 'chunks' to form a total skill.
Convergent/divergent thinking Hudson (1966)	Convergent thinkers search for single correct answers while divergent thinkers search for a range of 'answers'.
Rigidity/Flexibility	Rigid learners consistently apply a previously successful method of learning to all new situations. Flexible learners adapt their learning to suit the circumstances.
Active/Passive	Some learners actively seek out information while others work with the information they are given.

Learning contract

The learning contract method has been popularised by Knowles (1978) who claims 'It has solved more problems that plagued me during my first forty years than any other invention. It solves the problem of the wide range of backgrounds, education, experience, interests, motivations, and abilities that characterise most adult groups by providing a way for individuals (and subgroups) to tailor-make their own learning plans' (p. 127). A learning contract is essentially a formal undertaking by a student to complete an agreed upon activity. Figure 10.2 is a typical pro-forma for a learning contract. The 'objectives' of

the contract are clearly stated, the 'resources and strategies', used for learning are specified, and the 'evidence of accomplishment' and 'criteria for evaluation' are agreed upon in advance. It should be emphasised that this method of learning is not a 'do-it-yourself' method—it is important to have the support and assistance of an adviser for it to be effective.

1 OBJECTIVES	2 STRATEGIES AND RESOURCES	3 WHAT TO ASSESS	4 HOW TO SESS (CRITERIA)
1. To produce a written report on a) The advantages/disadvantages of using the OHP as a teaching aid in adult classes b) The variety of imaginative ways of using the OHP c) The rules for constructing OHPTs d) The methods of effectively using the OHP 2. To produce 4-6 relevant and imaginative OHP transparencies to be used in an adult class at work. These should not all be of the one type 3. To organize and present a lesson in which these OHP transparencies will be used.	1. Locate relevant books and articles on questions a-d in objective 1 2. Interview Gillian Shadwick and Greg Carr from ITATE 3. Arrange for the 3m training officer to visit work to demonstrate the various uses of the OHP and ancilliary equipment 4. Visit a fellow teacher of adults who has experience in using the OHP - observe him/her in class 5. See the ITATE OHPT sample kit.	The written report The finished transparencies The lesson in which the transparencies are used.	Written Report: (i) Approx 1000-1500 words (ii) Should use standard report format as per handout (iii) Should use agreed annotation (iv) All questions (a)-(d) should be answered and show evidence of wider reading and suggested interviews (v) Brief discussion of which resources were most/least helpful (vi) Key points should be stressed. Transparencies: (i) Should be a variety of different techniques used (ii) Should show evidence of some imagination (iii) Should be relevant to the lesson (iv) Should clearly follow rules for effective transparencies construction and layout. Lesson: (i) OHPTs used smoothly (ii) OHP used effectively.

Figure 10.2 Sample learning contract

Programmed learning

Individualised programmed learning packages were much influenced by the psychological work of B.F. Skinner in the 1950s. This method works on the assumption that a skill can be taught to anyone, provided it can be analysed and broken down into small segments which learners can master at their own pace. There are basically two types of programmed learning:

- Linear — This is where the subject matter is broken into a sequence of logically following steps. The learner masters each step, answers a question on the material, and then proceeds to the next step.
- Branching — This technique also has a sequence of steps but with a number of 'remedial loops' to correct misunderstandings.

Early programmed learning materials were exclusively print oriented, but now audio-visual and computer-based materials are being used.

Computer assisted learning

It is common to subdivide computer assisted learning into three categories:

- Computer managed instruction

  This is simply the use of a computer to manage and support a student's learning. For example, computers may be used to generate, store, and score test items; analyse test performance; provide feedback to students; schedule instructional resources, etc.

- Computer assisted instruction

  Computers can be used to assist instruction in several ways. They can supplement conventional instruction by allowing the opportunity for drill and practice on a range of problems. They can be used for sophisticated 'branching' programmed learning, where the learner is exposed to material, tested, diagnosed and then 'branched' to an appropriate set of learning materials. Finally, computers may be used to achieve a learning goal indirectly - not by direct instruction and testing, but by a series of carefully planned problems, questions and suggestions which 'lead' the learner to discover new information or concepts.

- Computer-based learning aids

  This is where a computer is used to support learning by providing data processing or storing diagrams and information which can be called up for use by the student. Thus it supports the student by eliminating lengthy calculations and providing useful data - it is an aid just like slide-rules, mathematical tables and calculators.

Learning activity packages

Learning activity packages normally contain a booklet together with a series of activities for the student. The booklet has a series of topics and sub-topics backed by a clear rationale. The objectives of the package are stated and there are a number of activities, quizzes, and an evaluation. The activities can vary: they may include: completing a checklist, viewing a film, listening to an audio-tape, watching a demonstration, carrying out an experiment, solving a problem, listening to a radio broadcast, attending a professional meeting, writing notes based on a lecture, or interviewing an expert. Thus learning activity packages can be used to bring together a variety of resources under the umbrella of a single unit of study.

The audio tutorial

This system was developed and used successfully by Postlethwait to teach biology to a large number of students. He found that his students had such a variety of backgrounds that the normal lecture-tutorial system did not work. He therefore recorded his lectures on audio-tape to free the student for more tutorial work. He soon added slides, specimen kits and laboratory material into the now familiar approach that enabled students to proceed at their own pace, and complete the syllabus in spite of radically different starting points. Students still met together for general lectures, quiz sessions and discussion. Postlethwait et al (1982) gives a good summary of the approach.

Personalised instruction

This method is closely linked to the work of Keller and Sherman (1974) who first used it at the University of Columbia, USA, in 1963. Keller made extensive use of senior students, whom he called proctors, whose task it was to tutor, test and monitor each student on a one-to-one basis. The main features of the method include individual study units, self-tests, study guides, individual and group practical work, 'monitors' or 'proctors', mastery learning, and a teacher who manages the system. The teacher occasionally provides 'classes', but these concentrate on motivating students rather than on providing information.

Distance learning

This is learning which takes place away from the institution providing the course. Individuals and small groups are able to study without attending an educational institution. The pioneering structure for distance learning was the correspondence course where the institution provided print-based material, structured course units and tutor-marked assignments. Nowadays booklets, audio-cassettes, radio and television broadcasts, local discussion groups, local volunteer 'organisers' and local educational institutions are all used in distance education. Freeman (1983) lists the ingredients for a successful distance learning course:

- distance learning materials
- distance tutoring
- counselling
- face-to-face tutorials
- facilities for practical work
- examination facilities
- library facilities
- access to multi-media resources.

Many of the above ingredients are designed to overcome the alienation of studying in isolation. Also, a local tutor maintains a link with the central provider and thus provides an important source of feedback.

Open learning

Open learning is an umbrella term covering all those arrangements which enable people to learn at a time, place and pace which satisfies their circumstances and requirements. It is a flexible form of educational delivery which focuses on the learner rather than the needs of the institution. It represents an attempt to make educational and training resources available to the wider community. This is accomplished by removing some of the barriers to participation evident in conventional course structures (e.g. that they occur at a certain time, in a certain place and at a uniform pace which does not suit all those who wish to participate). Open learning schemes use a wide range of teaching and delivery strategies, including learning activity packages and distance learning arrangements. Most schemes are tailor-made to meet local requirements and may be the product of collaboration between one or more institutions or sectors of the workforce. As such, open learning schemes break many of the rules of conventional educational institutions—there is little concern with accreditation, or with traditional entry standards, uniform course lengths or common starting times. To run effectively these schemes need to be funded in a way which gives the organisers the freedom to experiment and innovate.

Basic classroom techniques

There is a range of techniques that can be used in the classroom which will promote individualised learning. Some of these are listed below.

- unstructured reading. This can only be encouraged by the teacher and then left to the inclination and motivation of each student.

- directed reading. This is useful when the teacher wants to focus students' attention on a certain aspect of prescribed reading.

- remedial or back-up activities. Some students may require extra work, perhaps because the class material is too difficult or too easy. The teacher can plan for this quite easily. It may involve preparing some additional exercises and alternative problems, or having on hand existing resources which can be used by individual students at short notice.

- individualised classroom work. This is where the students are given (or choose) different activities to achieve a broad objective.

- projects. These are lengthy activities where students work independently or in small groups on a problem or subject, and then write a report which contains their findings.

- study guides. These sometimes accompany a prescribed text, but they can be written by the teacher to direct students towards learning activities which they complete outside class hours.

10.3 SUMMARY

This chapter has been concerned with the attitudes, skills and techniques necessary to teach individuals. There are many arguments in favour of 'individual' teaching, the most powerful being that it is fairer and more efficient than 'group' teaching. It is based on the following assertions:

- that students learn at different rates;
- that student who learn slowly do not learn less thoroughly than those who learn quickly;
- that there is no 'best' way to teach all students;
- that students have different needs, capacities and styles of learning;
- that there are a number of ways of achieving a specified set of learning objectives.

Individual learning is entirely consistent with a highly structured and standardised course. It implies only that teachers take into account the characteristics of each student when planning learning activities. Elements of individual learning will occur informally in most teaching situations. The purpose of this chapter has been to alert you to some of the formal mechanisms for individual learning and to make explicit the skills of individual teaching.

REFERENCES

Argyle, M. (1977). The social psychology of work. Harmondsworth: Penguin.

Bruner, J., Goodnow, J., & Austin, G. A. (1956). A study of thinking. New York: Wiley.

Freeman, R. (1983). The national extension college. In M. Tight (ed.), Opportunities for adult education, Vol. II, pp. 188-202. London: Croom Helm.

Hudson, L. (1966). Contrary imaginations. London: Methuen.

Kagan, J., Pearson, L., & Welch, L. (1966). Conceptual impulsivity and inductive reasoning. Child Development. 37, 583-594.

Keller, F., & Sherman, J. (1974). The Keller plan handbook. New York: Benjamin.

Knowles, M. (1978). The adult learner: A neglected species. Houston: Gulf Publishing.

Kolb, D. A., Rubin, I., & McIntyre, J. (1971). Organizational psychology: An experiential approach. Englewood Cliffs, New Jersey: Prentice-Hall.

Lewis, R., & Spencer, D. (1986). What is open learning? London: Council for Educational Technology.

Pask, G., & Scott, B. (1971). Learning and teaching strategies in a transformation skill. British Journal of Mathematical and Statistical Psychology, 24, 205-29.

Percival, F., & Ellington, H. (1984). A handbook of educational technology. London: Kogan Page.

Postlethwait, S., Novak, J., & Murray, H. (1982). The audio-tutorial approach to learning. New York: Burgess.

Rogers, C. (1983). Freedom to learn. Columbus: Charles Merrill.

Romiszowski, A. (1984). Producing instructional systems. London: Kogan Page.

Witkin, H. A. (1971). Psychological differentiations. In A. Cashdown and J. Whitehead (eds.), Personality growth and learning. London: Longman.

CHAPTER ELEVEN: TEACHING PRACTICAL SKILLS (A. WATSON)

11. PURPOSE OF THIS CHAPTER

In Chapter 7 you were introduced to the importance of practical work in TAFE teaching. The purpose of this chapter is to describe the nature and types of skills taught in TAFE and to introduce teachers to a simple model for teaching practical skills.

Skilled performance makes it possible for our civilisation to function. We depend on skills such as driving, dressing, running, and so on, to get us to work on time in the morning. Every form of sport depends on very specialised and highly developed skills, and schools teach basic or primary skills such as reading, writing and mathematics.

Technical and Further Education (TAFE) is also very concerned with and dependent on the development of skills. The skills of concern to TAFE are those skills which we generally depend upon in earning a living with typewriter, lathe, paint brush, books of accounts, and so on. For this reason these skills are usually referred to as practical or vocational skills.

The chapter is set out as follows:

After reading the chapter, teachers should be better able to describe and analyse the practical skills which they have to teach and to set out a lesson plan to teach a simple practical skill.

11.1 DEFINING SKILLED PERFORMANCE

Identifying examples of skilled performance is a very much easier task than defining or describing a skill.

Jones and Whittaker (1975) provide the following definitions of skilled performance drawn from various sources:

> the ability to perform a task as opposed to the knowledge required;
>
> a practical ability or change in behaviour which results from training or experience;
>
> the ability to perform a task to a satisfactory standard;
>
> a complex practical activity that requires the support of theoretical and factual knowledge. (pp. 8-9)

These authors find the above definitions only partially satisfactory. They point out that skilled performance requires abilities such as manipulation, organisation and direction and develop their own definition of skill as follows:

> A complex goal-directed sequence of activities with a high level of organisation and making extensive use of feedback. (Jones & Whittaker, 1975, p. 9)

This definition is sufficient for our purposes.

11.2 TYPES OR CATEGORIES OF SKILLED PERFORMANCE

There are three major types or categories of skilled performance. These are motor, perceptual and cognitive or language skills. (They are set out in table form in Figure 11.1).

Motor skills involve extensive use of motor systems and visible movements of the hands or body and range from gross bodily skills such as swimming and running to finer manipulative skills such as filing, sewing, mixing, operating a key punch, loading a paint brush, threading a needle, and so on.

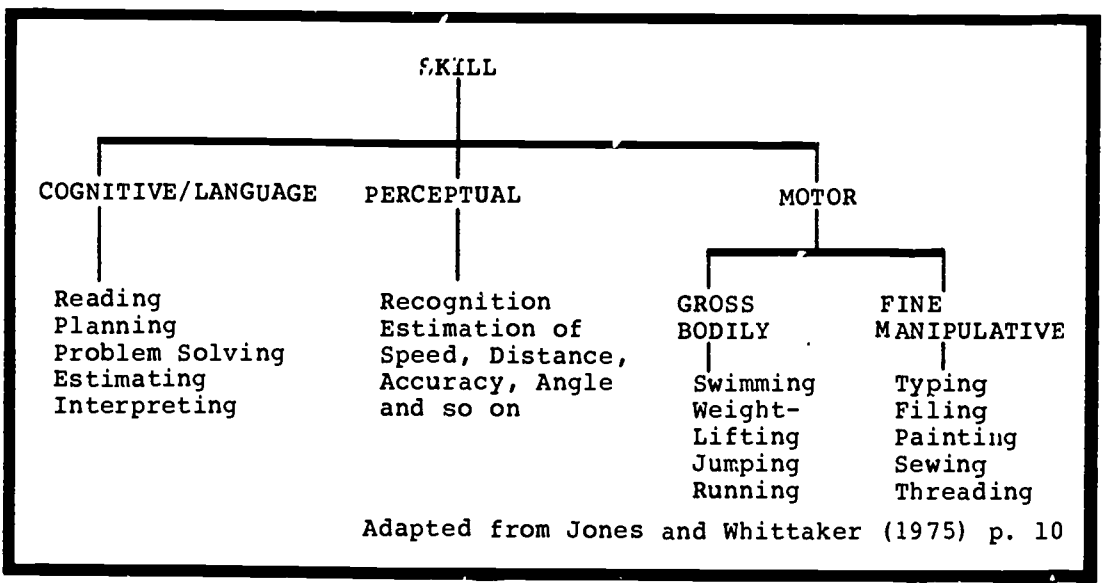
Perceptual skills involve the use of sensory systems and include such abilities as discrimination between various cues, recognition of patterns and symbols, estimation of distance, speed, accuracy, angle, and so on.

Cognitive/language skills involve the comprehension and manipulation of symbols and include such abilities as reading a circuit diagram, interpretation of a drawing or blueprint, solving problems in mathematics, preparation of books of accounts, and so on.

In actual fact, however, it is rare to find a skill which falls exclusively into one of these categories. Most skills taught in TAFE include all three types or elements of behaviour - it is their relative importance or predominance which varies.

Language and cognitive skills are important, for instance, in the initial stages of motor skill learning, and perceptual skills form an integral part of most aspects of motor skill performance. In fact, Gorman (1974, pp. 341-42) maintains that although the physical aspects of a skill are usually more readily observed - either the gross movements of the body or the manipulative movements of the hands - the knowledge of how to do and the image or strategy of what to do may actually be more important.

In this chapter we shall be concerned primarily with those skills which are predominantly manual or motor in nature. These are sometimes termed psychomotor skills. More often they are referred to simply as practical or motor skills. It must be remembered, however, that these motor or practical skills are complex patterns of activity usually involving all three behavioural elements: motor, perceptual and cognitive/language. It may well be found, also, that some of the psychological and teaching variables which influence skilled performance are more important for the manipulative or motor components of a skill whereas others may be more important for the perceptual or cognitive components.



Adapted from Jones and Whittaker (1975) p. 10

Figure 11.1 Categories of skilled performance

11.3 NATURE AND RANGE OF SKILLS TAUGHT IN TAFE

The skills taught in TAFE generally are those fine manipulative or precision skills which underlie the practice of some vocations or the fine arts. They range from basic skilled operations such as filing a metal block straight and square, sharpening a hand scraper, threading a needle and drilling a piece of timber to more complex tasks or jobs requiring the integration of some of these basic operations. These include tasks such as constructing a vee pulley, building a cabinet, making a pastry, and so on.

Gagne (1977, p. 211) draws a distinction between basic motor or practical skills and the larger units of action which he calls 'procedures'. He makes the point that many of the basic skills taught in TAFE occur as parts of more complex tasks or procedures and that the procedures are often built on intellectual and perceptual skills as well as the manual or motor components.

An example of this might be found in the construction of a round inclined branch in Boilermaking. This is a task which involves perceptual skills such as the estimation of line and angle, cognitive skills such as calculating mean diameters as well as the motor skills required in marking, cutting, assembling, and so on.

It is worth restating therefore that while certain practical skills may be seen as predominantly manual or motor in nature, most practical skills taught in TAFE involve perceptual and cognitive elements as well. It is the relative importance or predominance of each element which tends to vary from skill to skill and this may in turn depend on the stage of skill acquisition or development which a learner has reached.

11.4 STAGES IN THE ACQUISITION OF A SKILL

On the basis of laboratory observations and interviews with instructors, psychologists have suggested that the learning of a complex skill progresses through three stages which have been identified as an early-cognitive stage, a lengthy intermediate or fixation stage and a final-autonomous stage.

The early-cognitive stage

During the early-cognitive stage, which is of relatively short duration, the learner attempts to understand the basic aspects of the skill and its demands. The skill may be demonstrated and explained and then the components analysed. Often the component parts of the skill are small operations in themselves and so the study of similarities and differences between the skill to be learned and other known skills can facilitate learning at this

time. During this stage cognitive or intellectual elements would be emphasised. For example, before beginning the task of tinting a client's hair, the hairdressing student needs to understand something about the following:

- how to determine the base colour, texture and condition of hair;
- the effect of differing amounts of tinting product;
- the qualities of a desirable finished tint.

The intermediate-fixation stage

During the intermediate stage, students learn the skill und r the teacher's guidance. During this stage, which is relatively long, correct performance is gradually shaped and errors gradually eliminated. Once the succession of individual component operations has been identified so that the learner knows the content and nature of each one, continued practice with supervision will gradually eliminate errors and shape correct performance.

For example, skills such as planing wood, leadburning, filing and welding are developed gradually over many weeks and on many jobs. They also require close supervision from the teacher at this stage who should be checking students' work as follows: 'Feel this surface, you will notice that it still feels rough and requires more planing'.

Although the learner is mainly involved with practising the skill and the new motor elements, the cognitive and perceptual elements remain important as he or she becomes aware of the finer points of the skill, and learns various ways to correct errors (for example, attending to wrong cues, sub-tasks out of sequence, inserting extraneous components, and so on).

It is recognised that ample time is required to eliminate errors during the intermediate stages of most skilled learning, so that the learning process is usually spread over several days, rather than being confined to a single session.

The final-autonomous stage

During the autonomous stage, students learn to perform the skill to a high standard with less and less supervision from the teacher. During this stage, the pattern of activity becomes practically automatic so that the learner can perform the required actions without concentrating on them. ('Autonomy' means the ability to direct one's own activities.)

Characteristics of this stage are as follows: increased facility; speed and accuracy; proper timing; anticipation of most of the possible circumstances in which the skill would be used; knowledge of the finer points of the skill; also the capacity to perform the skill well even in the face of distractions or while attending to other matters.

For example, by this time students should be able to perform a difficult weld while hanging upside-down from a scaffolding and should be checking their own work as follows . . .' About two more strokes should do it, then I will check it with the straight edge'.

It should be emphasised that these stages should not be seen as distinct or discrete divisions but more as indicators that reflect the types of behaviour which tend to predominate at certain points in the learning of a skill. The stages clearly overlap and 'progression from one to the other is a continuous rather than a discontinuous process' (Fitts, 1968, p. 399).

In addition, the order is not inflexible for all learners. At times an action may be tried and practised before it is consciously analysed. An expert in a subject field does not face quite the same task as the beginner. For adult learners, in fact, who might be expected to bring gains to the task from previous experience, the early stage may be quite short. Nevertheless, the stages are generally valid for most learners, and some understanding of the nature of each stage and the related behaviours should be beneficial to teachers who have to plan teaching procedures which are appropriate for each stage and for each learner involved.

11.5 TEACHING PRACTICAL SKILLS IN TAFE

(A simplified model for teaching practical skills)

Practical skills are generally taught in TAFE by means of a form of instruction referred to as practical instruction. Practical instruction generally takes place in a practical or realistic setting such as a workshop, laboratory, building site, kitchen or bowling green, and employs practical tools, materials and equipment such as files, hammers, test tubes, stoves, levels, and so on.

The aims of practical instruction may be thought of as follows:

- the development of practical or motor skills to a satisfactory standard of performance;
- the strengthening of the prerequisite knowledge and sensory and cognitive abilities necessary for the performance of those skills;
- the fostering of those attitudes and habits of work necessary for the optimum performance of those skills.

These aims are generally achieved by following three main phases of instruction:

1) the preparation phase
2) the demonstration phase
3) the practice phase.

(The phases are presented diagrammatically in a simplified model for teaching practical skills in Figure 11.2.)

This model can be adapted to most types of practical skills taught in TAFE and can be related to the three previously described generally accepted stages in the acquisition of a skill.

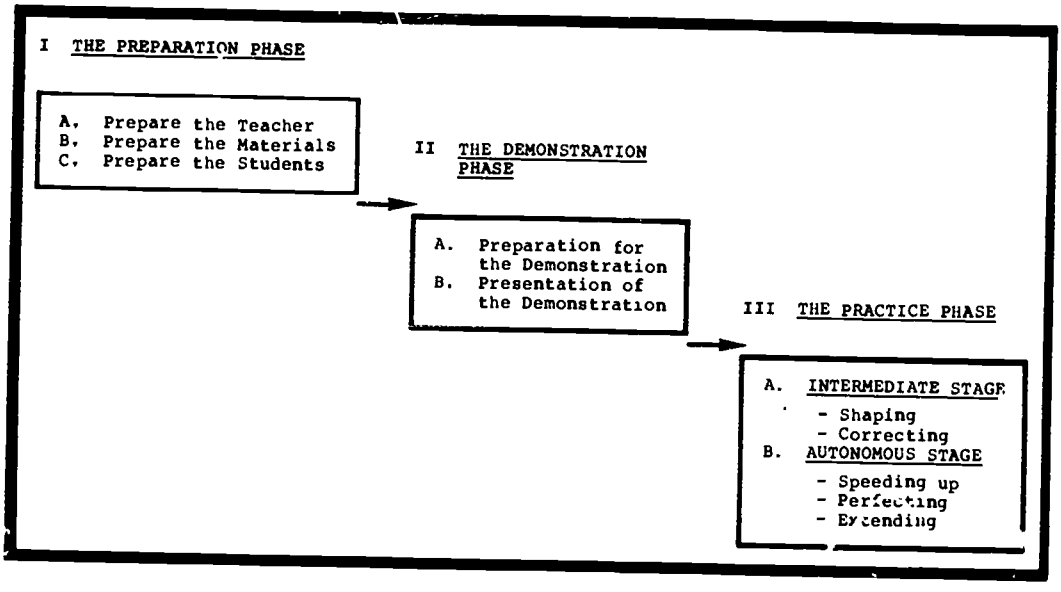


Figure 11.2 A simplified model for teaching practical skills

The preparation phase

During the preparation phase of instruction teachers generally prepare themselves through analysis of the skill or task to be learned and separating it into component skills or operations, and by preparing the necessary tools, materials, equipment and teaching strategies for the teaching of those skills and operations. This analysis may require the breakdown of a simple operation into operation steps (called an Operation Sheet) or the breakdown of a complex job into component operations (called a Job Sheet). Examples of operation and job sheets are provided in Figures 11.3 and 11.4. These job and operation sheets generally form the basis of lesson planning for practical lessons.

During this phase, the teacher will also attempt to prepare the students through assessment of their readiness, and by provision of an overview of the skill to be acquired or task to be completed.

At this time, the learner will generally be at the early-cognitive stage of skill development attempting to achieve an initial understanding of the basic elements of the skill and its demands.

Language or cognitive elements of the skill such as conceptualisation, identification and comprehension could be expected to predominate.

The most common teaching procedure is probably a combination of explanation, illustration and question-discussion and an important psychological variable is motivation. Motivation may be enhanced at this time by providing students with an acceptable reason for learning the skill and a worthwhile target or goal for which to aim.

The teacher prepares job sheet, tools and materials.

Operation: Changing Gas Bottles **Sheet No: 6**

Subject: Auto Body Welding

Tools and equipment:

One full bottle of oxygen
One full bottle of acetylene
Bottle holding cart
Regulator wrench

Procedure:

	Operation Steps	Key points
1	Turn oxygen bottle valve off	• Turn oxygen regulator flange nuts counter clockwise to remove.
2	Remove regulator, empty oxygen bottle	• Don't bump or drop regulators. They are delicate instruments.
3	Turn acetylene bottle valve off	• Turn acetylene regulator flange nuts clockwise to remove.
4	Remove regulator from empty acetylene bottle	
5	Replace valve hood on both bottles	• Never move a gas bottle until valve hoods are in place.
6	Unlatch hold-down chain	
7	Remove empty bottles from cart	• Don't drop bottles.
8	Store empty bottles	
9	Place full bottles on cart	
10	Secure hold-down chain	
11	Remove valve hoods	
12	Replace oxygen and acetylene regulators on bottles	• Never use petroleum lubricant on any part of gas welding equipment.
13	Install acetylene bottle	• Reverse of operations 3, 4.
14	Install oxygen bottle	• Reverse of operations 1, 2.

Figure 11.3 Example operation sheet (adapted from Larson (1972) p. 162)

Job: The G Clamp **Job Sheet No: 7**

Subject: Fitting and Machining

Procedure:

Operation Steps		Key Points
1	Remove scale from face	• check file handles • efficient and accurate marking out • use edge of file • belly in file • datum surface for filing square
2	File edge straight and square to face	• selection of correct edge • straight and square datum edge (all measurements taken from this edge)
3	File end straight and square to face and edge	• selection of correct end • marking out at right angles
4	Blue the surface	• Thin even coat
5	Mark out	• scribers and dividers must be sharp • set dividers accurately • hold scribing block scriber short • get eye down to level of scriber • draw scribing block across job correctly • re-draw double lines • extreme accuracy required • beware of bent scriber end
6	Prick and centre punch	• reference marks - shallow • guide for drill - duper • conical point important • calculate RPM at which to set machine for each size of drill to be used
7	Drill	• check length of lips • check angle of lips • correct cutting speeds • hold in vice • use cutting oil CS for MS = 100 rpm

Figure 11.4 Partial job sheet

The demonstration phase

The main purpose of the demonstration phase is to provide the students with guidance. That is, guidance as to the skill or task to be performed and the correct methods of performance.

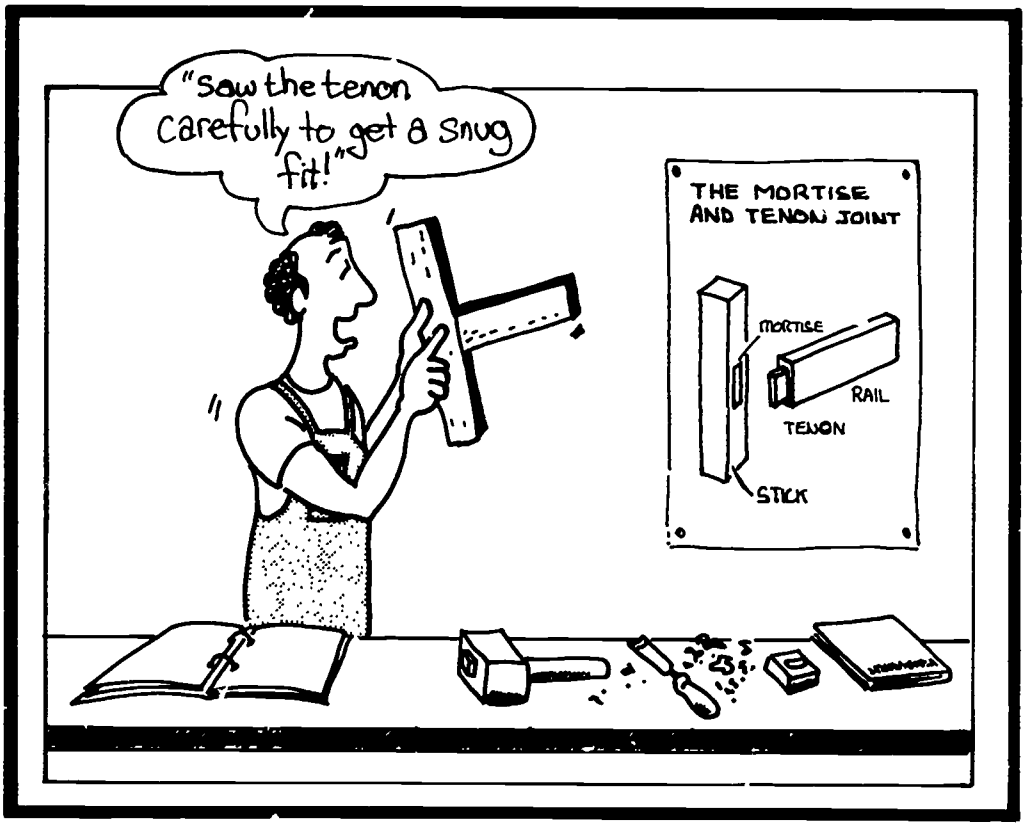
The most common teaching procedure employed to provide this guidance is undoubtedly the demonstration, that is, demonstration by the teacher of the operations to be performed which constitute the skill or task, together with an explanation of the correct techniques, materials and methods required for optimum performance. The teacher draws attention to each operation and related technique as follows . . .' The next step is to sand the putty with 100 grit paper. Make sure to use long strokes like this and don't push too hard'.

It has been said that a good demonstration provides both 'an overview of the skill to be acquired and a model to be imitated'. (Klausmeier & Goodwin, 1966, p. 326.)

In addition, it has been found that the demonstration is likely to be more effective if student involvement in and interpretation of the demonstration are maintained at a high level and if initial student responses are guided verbally as well as physically. ('Hold the file like this'.)

During the demonstration phase the student is likely to still be at the early-cognitive stage of skill development although acquiring a much clearer understanding of the component parts of the skill and of their relationship to one another and to the whole.

Perceptual and cognitive elements would now be important.



The teacher demonstrates and explains a procedure.

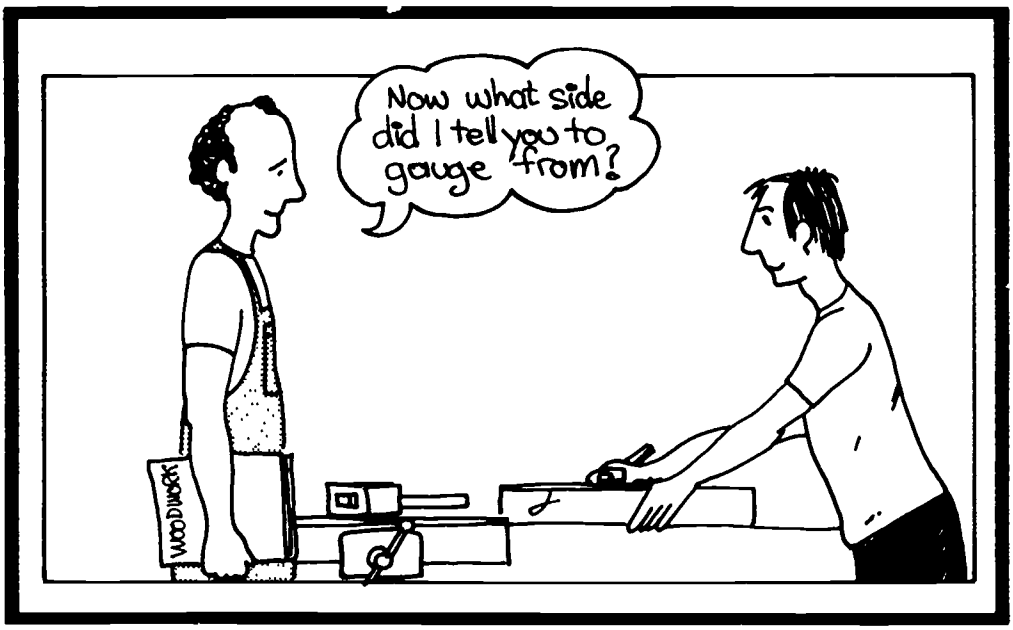
The practice phase

The practice phase tends to be the longest of the three phases and the objective of this phase is to gradually shape and perfect the students' performance or execution of the skill to be acquired.

During the early stages of the practice phase students will pass through the intermediate or fixation stage of skill development. Teachers here should concentrate on the gradual shaping of the correct performance of the skill and its component operations and on the elimination of errors. (Although in some circumstances speed might be stressed before accuracy.) At this stage in the learning sequence motor elements become important and teachers need to provide continual supervision, feedback and encouragement.

During the later stage of the practice phase it is hoped that students will move into the final or autonomous stage of skill development. At this stage the emphasis is generally on perfecting, speeding up, automatic performance and on extending the skill to more complex or realistic situations. Teachers now should gradually withdraw the amount of supervision and feedback while encouraging students to concentrate on standard of performance and self evaluation. In this way students will gradually learn to do the job automatically, fluently and accurately, even when working under pressure.

Throughout the practice phase of instruction the most important teaching variable of course is practice. Teachers have the responsibility to ensure that practice is effective and that methods and schedules of practice employed are appropriate. In addition teachers should let students know how well they are doing as often as possible by providing regular encouragement and feedback, and they should take steps to maintain and enhance motivation for students to keep trying to do well.



The teacher provides supervision and feedback.

11.6 SUMMARY

Skilled performance makes it possible for our civilisation to function. Technical and further education is concerned very much with the development of those skills we depend on to earn a living. These are referred to as vocational or practical skills.

Three types of skilled performance have been identified: motor, perceptual, and cognitive or language skills. These skills generally develop through three stages: the early-cognitive stage; the intermediate-fixation stage; the final-autonomous stage.

Effective teaching of practical skills generally requires three phases of instruction: the preparation phase; the demonstration phase; the practice phase. This chapter has outlined some principles and procedures for teachers to follow during these three phases of practical instruction.

There is a fourth phase based on the assessment of practical skills. Methods of assessing practical skills will be treated, however, in Chapter 14.

In addition, for all of these stages and phases to fall into place and to be implemented effectively it is necessary for teachers to prepare lesson plans for practical lessons. Lesson planning for practical lessons follows the same basic principles which were described in Chapter 4 except that they are generally based on an analysis of jobs or operations rather than on an analysis of subject matter. Example lesson plans for practical lessons are provided at the end of Chapter 4.

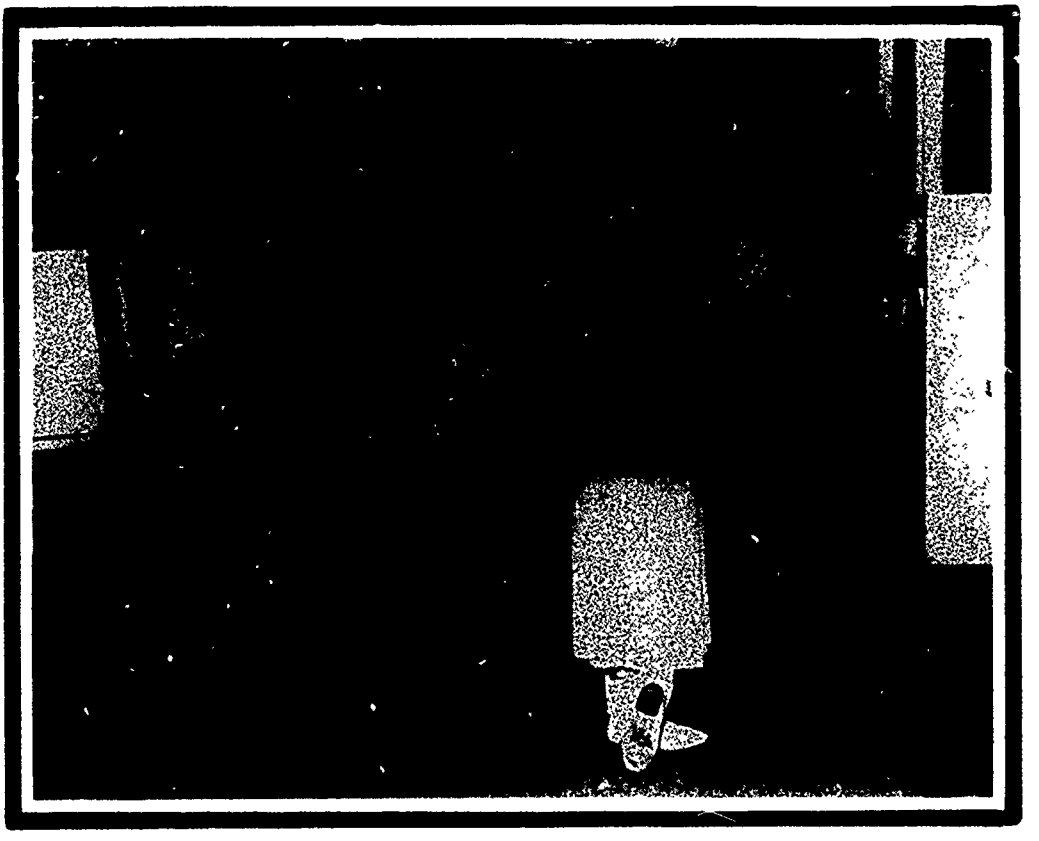


Figure 11.5 Using practical skills in the library

REFERENCES AND FURTHER READING

Field, L. (1984). Teaching practical work in TAFE, Sydney CAE booklet.

Fitts, P. M. (1968). Factors in complex skills training. In R. G. Kuhlen (ed.), Studies in educational psychology, (pp. 390-404). Waltham: Blaisdell Publishing.

Fitts, P. M. (1964). Perceptual motor skill learning. In A. W. Melton (ed.), Categories of human learning. New York: Academic Press.

Gagne, R. M. (1977). The conditions of learning, (3rd edn). New York: Holt Rinehart & Winston.

Gorman, R. M. (1974). The psychology of classroom learning. Columbus: Merrill.

Jones, A., & Whittaker, P. (1975). Testing industrial skills. Essex: Gower Press.

Klausmeier, H. J., & Goodwin, W. (1966). Learning and human abilities: Educational psychology. New York: Harper & Row.

Klausmeier, H. J., & Ripple, R. E. (1971). Learning and human abilities: Educational psychology (3rd edn). New York: Harper & Row.

Lovell, R. B. (1980). Adult learning. London: Croom Helm.

Larson, M. E. (1972). Teaching related subjects in trade and industrial and technical education. Columbus, Ohio: Merrill.

EXAMPLE LESSON PLANS*

EXAMPLE 1: BOOKBINDING

JOB: Rebinding paperback book (case style) CLASS: Stage 1 Bookbinding

OBJECTIVES: To enable students to recover a paperback book in a hard case cover style (as per sample)

TOOLS AND MATERIALS:

- Metric rule
- Stanley knife
- Folder
- Straight edge
- Pencil
- Glue pot and brush
- Shears

REFERENCES: Modern Bookbinding. A. Vaughan p.4.

INTRODUCTION:

1. Link with theory lesson (i.e. putting a 'hard' cover on a paperback book is a variation on case binding)
2. Purpose of job - protection (hard cover)
   - appearance (neatness, cleanliness)
   - variation of style
3. Show 3 examples - before
   - during (with end papers and spine lining)
   - after
4. Discuss tools needed. Emphasize:
   - care with Stanley Knife
   - checking 'Viscosity' of glue

BODY:	OPERATIONS	KEY POINTS
STEP 1	• Remove covers from book • Store cover • Cut endpapers	 Grain runs up spine Care with knife
STEP 2	• Lay out clean waste paper • Apply glue (6mm wide on edge) • Position endpapers	 Place on spine and head
	STUDENTS TO PRACTISE TO THIS STAGE.	CHECK OK BEFORE PROCEEDING
STEP 3	• Clear guillotine area • Trim far edge	No joking around. One person to use guillotine at a time
STEP 7	• Place book in press (between pressing boards)	

CONCLUSION: 1. Check students can recall main steps
2. Display finished student work, and point out good/bad features

* *Example lesson plans are adapted from actual lesson plans prepared by students at the Institute of Technical and Adult Teacher Education, Sydney CAE*

EXAMPLE LESSON PLANS*

EXAMPLE 2: CABINETMAKING

CLASS: Cabinetmaking Practical

JOB: Secret Mitre Dovetail Joint

OBJECTIVES: To enable students to set out and cut a secret mitre dovetail joint, and to construct the joint

TOOLS AND MATERIALS:

- Sample
- Chart
- Drawing sheet
- Dressed timber
- Cutting gauge
- Set mitre
- Sliding bevel
- Chisels

REFERENCE: Job Sheet (no 17)

INTRODUCTION:

- Revise lap dovetail joints
- Show how secret mitre dovetail is different (Example: telephone table)
- Uses - strength
  - hidden

BODY:

OPERATIONS	KEY POINTS
STEP 1 Gauge thickness of timber on both on both pieces (for 8mm overlap)	a) Cut across grain with cutting gauge b) Gauge edges
STEP 2 Set out pins	a) Stand outside pins 3mm from edge b) Mark centre line for pins c) Divide remaining space into 3 equal strips d) Square lines to end of timber e) Mark 1 in 8 pitch on one piece of timber f) Set up sliding bevel to this pitch g) Set out pitch on end of pin piece
STUDENT PRACTICE (REF: JOB SHEETS 1 TO 4). CHECK MARKING OUT BEFORE DEMONSTRATING NEXT OPERATION	
STEP 3 Cut pins	a) Cut every alternate pin with dovetail saw
STEP 9 Mitre the lap on pin and tail piece	a) Use a shoulder plane across grain to make mitre b) If too tight, mark parts needing easing and remove with chisel c) Make sure mitre closes tightly. (If not, ease with shoulder plane.)

CONCLUSION:

- Summarize steps which students found difficult
- Show examples of competent and faulty jobs
- Go through main steps again and check students can recall them
- Student questions

* *Example lesson plans are adapted from actual lesson plans prepared by students at the Institute of Technical dult Teacher Education, Sydney CAE*

CHAPTER TWELVE: INSTRUCTIONAL AIDS (L. FIELD)

12. PURPOSE OF THIS CHAPTER

This chapter deals with a range of resources which can assist instruction, such as video, the overhead projector, handouts, the chalkboard, and so on. Each of these is discussed briefly, and applications drawn from TAFE are included to stimulate your thinking and further investigations into this area. The chapter is set out as follows:

Of course, instructional aids comprise only one of the technical resources referred to in our teaching model, but they are the most closely associated with face-to-face classroom teaching. Other resources, such as industry, libraries, colleagues, etc., will all be dealt with in the next chapter.

12.1 SELECTION PRINCIPLES AND CONSIDERATIONS

The wide range of resources available to the TAFE teacher can complicate decisions about which instructional aid is the best for a particular segment of a course (and, indeed, whether to use an instructional aid at all). One needs to sort out answers to questions such as:

- Is special equipment needed to use the aid selected; if so, is it available and working?
- Is the aid appropriate for the particular students in this course (taking into account the number of students, and their age, sex, ability levels, attitudes, etc?)
- How much does the training need to simulate work conditions?
- What medium would be best in packaging and updating the course area?
- Is this segment of the course important enough (in terms of the degree of skill required, the likely 'life' of the course, and so on) to justify the choice of aid?
- What is the cost-effectiveness of using this aid in contrast to the alternatives?

- Is the administrative backup available for you to produce particular instructional materials? This would encompass adequate funds for software, support staff, (e.g. graphic designers), and time off from teaching.
- Is the teaching environment conducive to using the aids chosen?

Before you become too discouraged by the apparent complexity of this outline, it ought to be pointed out that the use of instructional aids in a well planned, professional manner can be a great asset in TAFE teaching, and a number of specific applications of instructional aids are illustrated in the remainder of this section.

There is also a general benefit accruing to your using instructional aids well. It implies that you, as a teacher, have given sufficient thought to your students and subject matter to recognise a potential difficulty and that you have tracked down or made an aid in response. You will find that students are quick to let you know they appreciate such concern.

So, it is well worth thinking about how you can introduce instructional media into your teaching. In order to do so, there are two overriding principles which you ought to bear in mind.

Principle 1: Relate your use of instructional aids to your lesson objectives

The first step in instructional planning is to state your objectives. Then, once you have sorted out what you want students to know or do, choose an aid which supports this objective.

Principle 2: Don't re-invent the wheel

In other words, do not plunge into developing elaborate instructional aids yourself until you are sure that suitable materials are not already available. You could ask colleagues and your college librarian to help you find the materials you want. And remember that the TAFE system in each State has media and curricula experts who can offer advice on existing materials and, if these are unsuitable, can help you with the skills and materials needed to produce your own aids. See if you can find out exactly what expertise and facilities are available to you.

12.2 THE MOST COMMON INSTRUCTIONAL AIDS

In this section, it is assumed that you've decided on the objectives for a particular lesson, and you've checked to find out what instructional aids are available for the topic or skill you're teaching. Let's look at the most readily available aids, and discuss how and when each can be used within TAFE. If you want to follow up the information included here, you'll find references in both your TAFE College library, and at your teachers' college.

The overhead projector

The overhead projector is one of the most commonly used instructional aids in TAFE. There are numerous reasons for this. Overhead projectors are cheap, and easy to use. They allow the teacher to face the class, and at the same time point out various features on the transparency with a pointer. Also, of course, the teacher controls the pace of the presentation, unlike the situation when using film or video.

The simplicity of making overhead transparencies is another major advantage of this medium. Many TAFE teachers make their own transparencies, either by hand or by using one of a range of drawing and lettering aids available. Overhead transparencies can be used to achieve a range of purposes in an interesting and entertaining way. There are few disadvantages to using the overhead projector, as long as one has the right equipment, and a suitable room.

Let's look briefly at the steps involved in preparing for, and using, a set of overhead transparencies during a lesson.

Check the availability of a suitable room and equipment

First, check on the availability of an overhead projector. Make sure that the bulbs and the focusing mechanism are working. Next, check on ways of darkening the classroom, by using such equipment as blinds or a special daylight screen.

A typical set up for using the overhead projector looks like this:

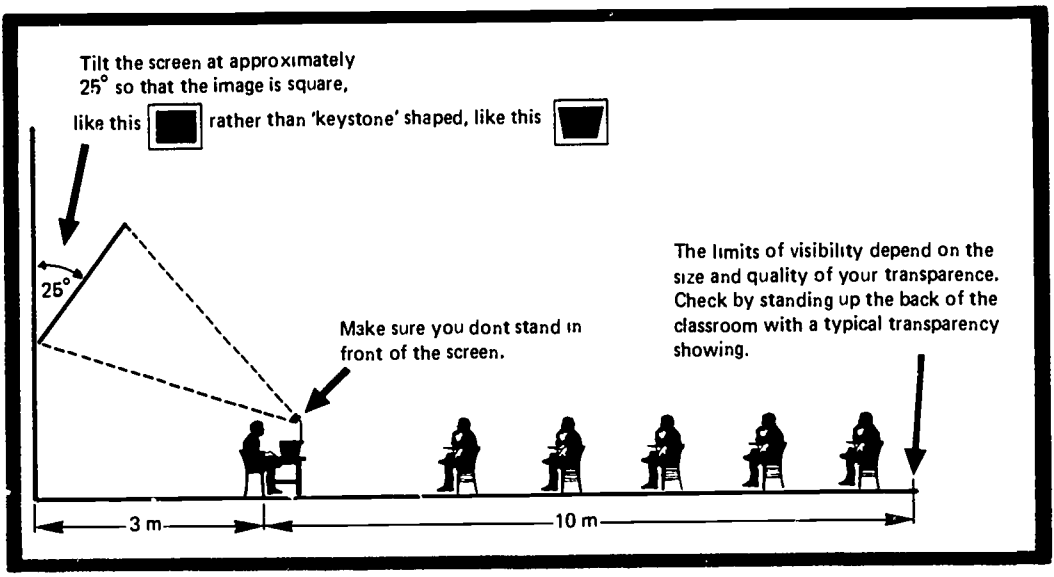


Figure 12.1 Room layout for using the overhead projector

Design the overhead transparency

Overhead transparencies are really sheets of clear plastic, called 'acetate', which are sometimes sticky-taped onto a cardboard frame (called a 'mount') for extra support. The two most common approaches to making an overhead transparency are to write or draw directly onto the acetate, or to write or draw onto paper and then transfer this image onto acetate using a thermal heat machine or photocopier. These two options are shown in Figure 12.2.

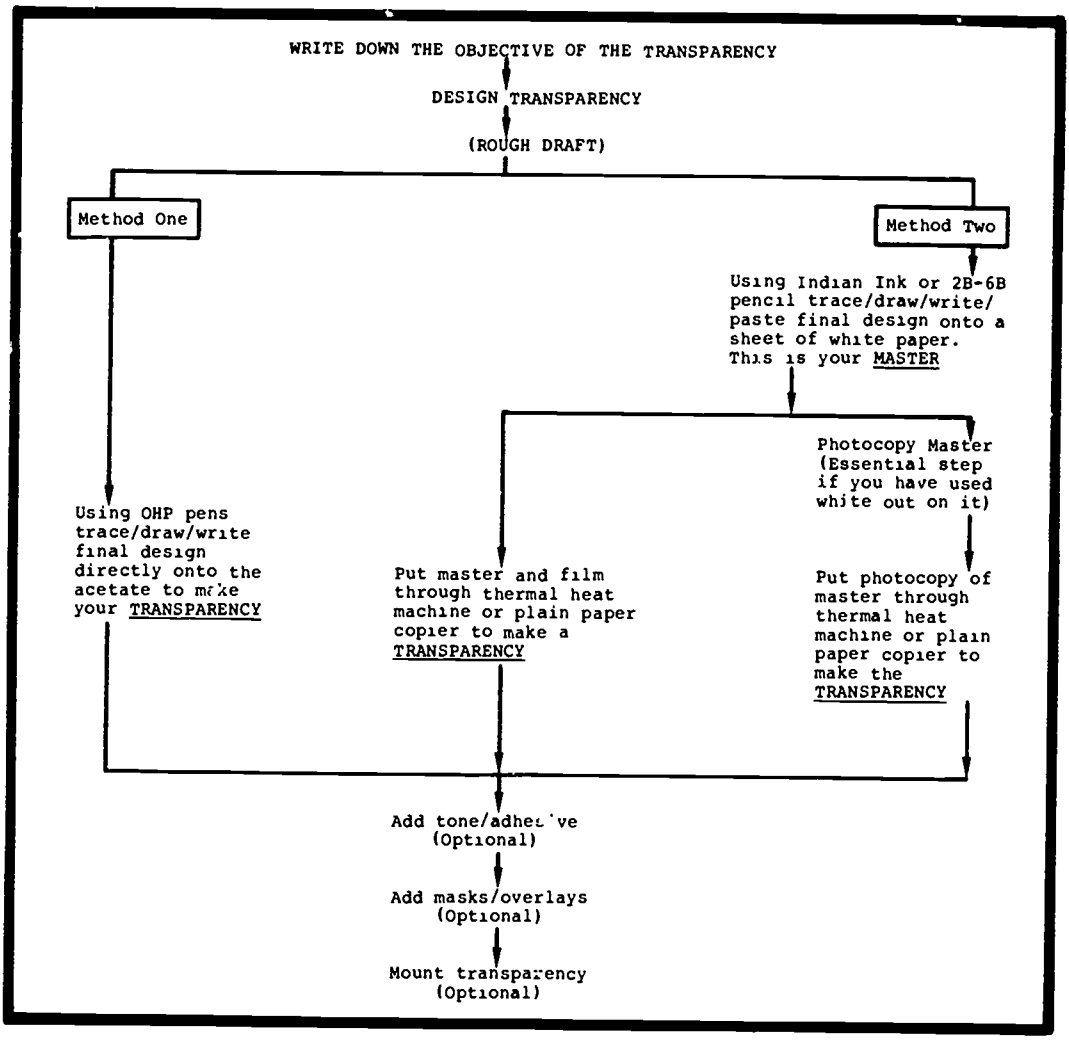


Figure 12.2 Methods of making a transparency

Once the black image is on the acetate, colour can be added and masks or overlays can be produced. Masks are pieces of cardboard which block out part of the screen. These can be slid or folded out of the way when required. Overlays are extra pieces of acetate which can be folded into position. Figure 12.3 contains examples of each.

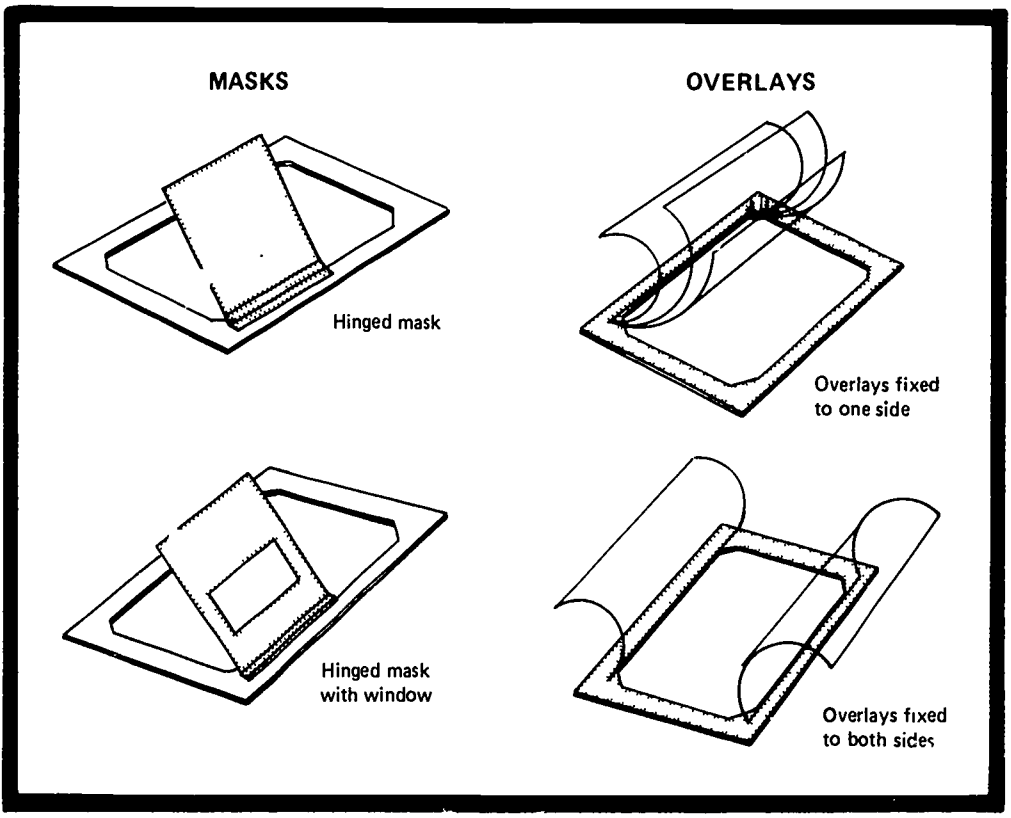


Figure 12.3 Masks and overlays for overhead transparencies

The actual design of the artwork needs care, too.

When designing your own overhead transparencies, check that:

- The message is simple and unambiguous.
- The design is imaginative and uncluttered.
- Students can read the lettering from the back of the room.
- The transparency achieves its objectives.

Checking before the presentation

Before showing a set of overhead transparencies, it is a good idea to check that everything is ready. Here's a checklist which you can use.

Check that:

OHP is working	
Spare bulb is in position	
OHP is correctly positioned in classroom	
Focus is sharp	
Screen is in position/will pull down	
Classroom seating is organised	
Transparencies are correctly sequenced	
OHT pens are working	
Pointer is ready	

Showing the overhead transparencies

Use of the overhead projector in a professional manner is a skill that takes time to master. The following points should be noted.

- Don't stand in front of the screen. Either sit or move to one side.
- Use a sharp pencil positioned on the screen to highlight points.
- Refer to the transparency by looking down at the projector, not across at the screen.
- Make sure you have the transparency on long enough for slower students to understand it. However, you should switch off the projector when you've dealt with a particular transparency. This will also make the transition from one transparency to another easier.
- You can write on the actual transparency with non-permanent pen, and rub it out later.

The chalkboard and whiteboard

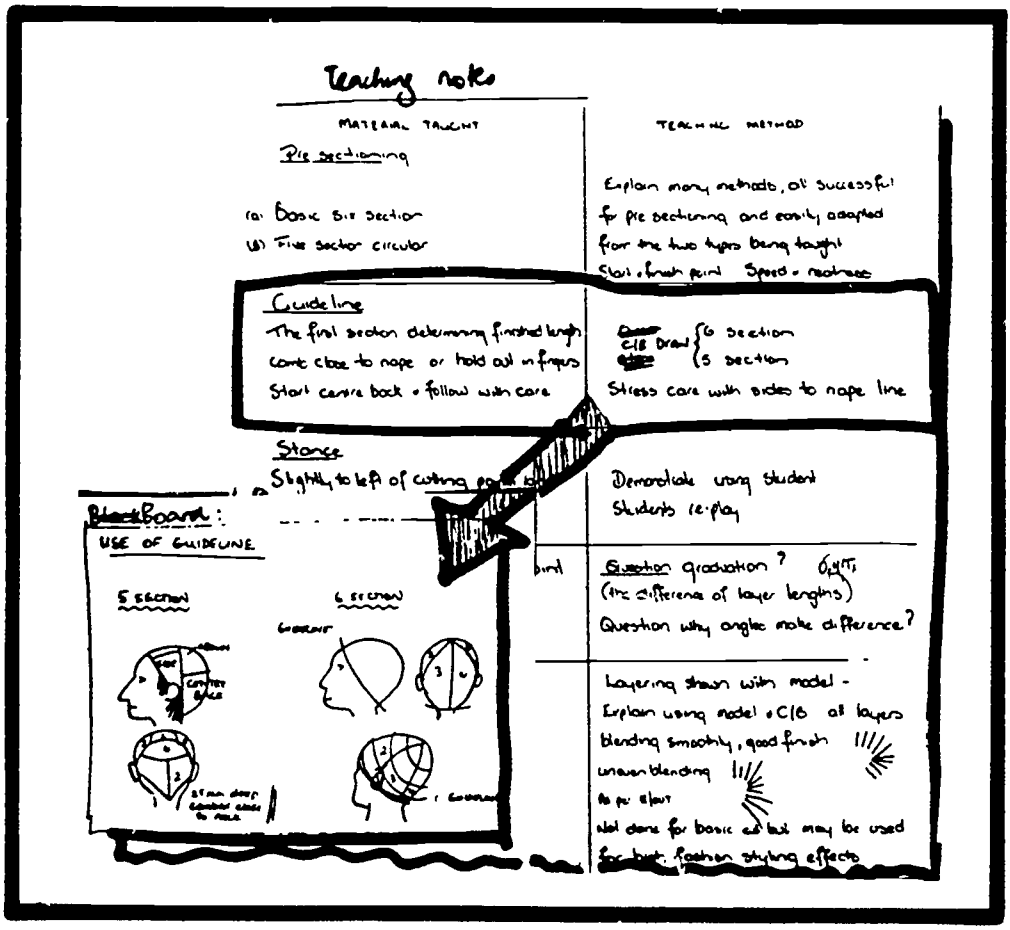
The black or green chalkboard is familiar to every teacher. Some chalkboards have sliding or hinged panels, which are useful if you want to put some material (such as a diagram or quiz) on the board and reveal it part of the way through the lesson.

Whiteboards are becoming increasingly popular, and are easier to read than chalkboards. You can write on them with either water-based or spirit-based markers (but not with permanent markers).

Here are some suggestions for working with chalkboards and whiteboards:

- Keep part of the board for developing and summarising the lesson, and part for illustrations and explanations (to be cleaned off as soon as they have served their purpose).
- Plan in your lesson notes how you want the board to look at particular stages. At the end of each segment of information (for example, at the end of a lesson) the board should contain a clear 'map' of what has been covered. Figure 12.4 gives one example from a class on hairdressing.
- Use the board to record headings, summaries, drawings, diagrams, graphs, and so on.
- Experiment with simple design ideas, such as:
  - using coloured chalk and pens
  - putting headings in capitals and boxes
  - representing abstract ideas using symbols, stick figures, etc.
- If students are expected to take notes, remember that the dimensions of their paper are quite different from those of your board. Tables which go across the full width of the board will cause students particular problems.
- Start your lesson with a clear board. After your lesson, you should also clean the board.
- Think about how you combine what you say and what you write. For example, use the board to record key words from the points you make; stand aside from the board when you are talking; and finally, avoid talking and writing at the same time.
- Give students time to copy down what you have put on the board, and give clear clues such as 'This part is important you'll need to get this down' so they know what to concentrate on most.

In deciding whether or not to use a board in a particular lesson, the following advantages and limitations ought to be taken into account.



Source: Teaching material by M.C. Clarke

Figure 12.4 Sample lesson plan and board layout

Boards are widely available—in fact, almost every teaching space is equipped with one. Boards are also simple to use, and a good means of helping students in note taking.

On the other hand, boards can be messy to use and clean. Another disadvantage is that the information placed on the board cannot be referred to in a later lesson. Therefore, for detailed information needed over several sessions, another type of aid such as an overhead transparency can be preferable.

Photographs

The term photograph includes

- standard photographic prints, either in colour or black and white;
- polaroid prints which can be produced during the lesson;
- photographs from magazines.

Photographs can be used in a variety of ways. For example, they can be handed around the class, they can be incorporated in a formal display with explanatory captions, and they can be used in self instructional materials to illustrate stages in a process or job.

Photographs have several important advantages over other instructional aids, but of course, they also have limitations. The following list of factors should help you to decide whether photographs are appropriate in your circumstances.

The advantages of photographs are that they:

- permit detailed close up study at individual's own pacing;
- are useful in self instructional packages;
- are important in displays, particularly in visual subjects like fashion, advertising, design, and so on;
- can illustrate equipment or techniques not available at the college;
- are useful in a series to show the stages of a process (for example, dough rising in a cooking class) or project (for example the construction of a table in a cabinet-making class);
- Don't require any equipment to display.

The limitations include the fact that they

- are difficult to use with large groups, although enlargements of photographs can be made if the circumstances justify the cost;
- can be a problem to take if you can't use a camera yourself, and don't have audio-visual assistance at your college.

Film and video

In TAFE, the main formats used are 16mm for film, and 3/4 inch video-tape cassettes for video, although a range of other sizes is occasionally used. Prints or tapes may be obtained in a number of ways - from the local college library, from a commercial or government film or video library, or by taping television programmes where this does not contravene copyright.

When showing films or videos, remember that they take over from the teacher. Therefore, its important that films and videos are carefully selected, and do not merely serve as a fill-in. (In other words, do not leave students wondering: 'Why are we being shown this?')

A good way to incorporate film or video in the lesson is to give a brief introduction first, telling students what they ought to look for while watching it. Keep the showing brief (up to about ten minutes, which may mean you will have to preview the film or video first and show only a part) and afterwards, follow up with a discussion or quiz.

Many advantages are claimed for films and videos, including the following:

- They are good for showing material which would otherwise be difficult for a group to watch at the same time. For example, things which happen too fast or which are too small to see are good subjects; so are industrial processes which are dangerous to get too close to, or which occur at locations where it's difficult to take the whole class.
- They allow action to be 'frozen' and analysed. For example, a video of a student using a welding torch can be stopped, discussed at length, and then restarted.
- From the teacher's point of view, videos have several distinct advantages over films. It is cheaper to make video tapes, and simple videos can be shot in the classroom or at an industrial site. Video tapes are also reusable and, since many teachers have VTR equipment at home, can be used to record television programmes of interest.

On the other hand, the main disadvantages of films and videos are:

- Students will automatically compare what they're watching with their private television and cinema viewing. It's hard for students to concentrate for long on an amateurish production.
- Both formats need expensive equipment to show them, and most teachers have had the experience of arranging for a viewing, only to find the projector or VTR is not working or unavailable. One needs to check on this well before the class time.

Printed sheets

Printed sheets are the simplest, and yet one of the most effective, instructional aids. Their various applications fall into two broad areas:

Presenting information

Printed sheets can be used to present information in a number of ways, including:

- to provide general information about a subject, such as its aims, objectives, references and assessment requirements;
- to summarise a theory lesson, so that students can concentrate on what is being said rather than on taking notes;
- to present data. For example, suppose you want to refer to a table of numerical information which is too detailed for students to copy down. Make an overhead transparency of the table, and also make multiple copies on handouts. In class, refer to the transparency during your discussion, but afterwards give students their own copy for later reference.

When printed sheets are used to present information, thought will need to be given to when they should be distributed. Don't expect students to listen to you and to read detailed information at the same time. On the other hand, giving out sheets at the end of a lesson can mean that they aren't read!

Guiding action

Printed sheets can also be used to guide classroom activities such as discussions and practical work. This area in turn can be subdivided to allow sheets to be used in the following ways:

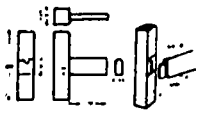
- to stimulate thinking; for example, printed sheets can contain exercises, quotations for discussion, fill-in items or tests;
- to describe practical work. Sheets used for this purpose are called 'job sheets', and are particularly important in TAFE. They give directions for performing a series of operations involved in a complete job, such as replacing a cylinder head gasket. A typical job sheet, together with some notes on the contents of such sheets, is shown in Figure 12.5.

The production of printed sheets for use in classrooms has become much easier in recent years, with the more widespread use of word processors and photocopiers. Using these two tools, together with simple drawing instruments and design materials, you can produce quite professional-looking handouts.

JOB: Making a stub shouldered mortise and tenon joint.

COURSE 1: Carpentry & Joinery
STAGE: Stage 1
WEEK: Week 12

SKETCH:



MATERIALS:

1 length maple 200mm x 38mm x 38mm
1 length maple 200mm x 38mm x 19mm

TOOLS/EQUIPMENT:

12mm, 25mm chisels	sash cramp
tape measure	mortise board
sharp pencil	mortise gauge
try square	smoothing plane
marking knife	tenon saw

REFERENCES:

Information sheet no. 14 - basic woodworking joints

MARKING SCALE:

Preparation of timber	10
Accuracy of setting out joint	10
Accuracy in cutting mortise	30
Accuracy in cutting tenon	30
Fitting of the joint	10
Rounding of corners on rail	5
Cleaning up job	5
	100

PROCEDURE:

STEP 1: Preparation:
Dress face and edge of timber
Gauge and dress to width and thickness
Cut and dress timber to length

STEP 2: Marking out joint:
Mark length of mortise, as shown

This example is based on material provided by Keith Larven, School of Building
Source: Teaching Practical Work in TAFE (ITATE)

Figure 12.5 Sample printed sheet for use in a TAFE classroom

Charts

Charts combine words and pictures on a flat surface. Their main application includes the teaching of visual areas like design and drafting, the depiction of industrial processes diagrammatically, and presenting reference information such as symbols and numerical data.

Some of the parts which can be combined on a chart are:

- graphs: the most common forms of graphs are bar charts and line graphs. They ought to be neatly drawn up against a pair of clearly labelled axes;
- tables: numerical information, such as bit sizes, temperatures, ratios, and so on, are best presented in table form. Thought needs to be given to how to set out tables so that they are easy to read;
- cartoons and graphics: even if you can't draw, many images can be borrowed from magazines and other sources to improve the appearance of your chart.

Quite a few books have been written which will help you plan and design a wall chart; ask your college librarian, or look under 'technical communications' or 'graphic design' in the library index.

Models and samples

Models are probably the closest thing to a real piece of equipment, although they are on a different scale. They frequently illustrate some process - such as power generation or, simply by being of a different size from the real thing, they can make observation by students easier. Examples include a scaled down model of a house illustrating household wiring, and an enlarged mouth for a demonstration of dental repair work. Real objects transformed in some way (such as a pump with parts of the housing cut away) are also frequently used as models.

Samples can include any example of a job at different stages, as well as raw materials, examples of faulty work, and so on.

Most samples are reusuable, although some (in areas like cooking and biology) need to be prepared for a particular lesson and then discarded.

Models and samples really fit into two categories, namely, those which are for use in one lesson only, and are designed to clarify some part of a demonstration, and those which are on permanent display. In both cases, the aids should be well designed and easy to see. In addition, permanent displays ought to be self explanatory, so you will need to think about how to include notes and headings in the display.

Here are a few tips for using models and samples in the TAFE classroom:

- Use them to overcome the limitations of 'time' and 'space' in the classroom. For example, horticulture students learning to strike cuttings would benefit from a series of samples at different stages of growth. Similarly, students trying to interpret two-dimensional diagrams of objects will be helped by actually seeing the object depicted.
- Use samples to illustrate clearly what you require of students. Also, samples are particularly effective for helping students to discriminate between tasks performed well and poorly. For example, a set of samples could be used to highlight the differences between correct and incorrect welding methods.

12.3 COMPUTER ASSISTED INSTRUCTION

The computer has permeated all areas of life, not least of all the field of education. It is an educational tool that can be used for: administration, recreation, processing data, information exchange, research, modelling and simulation, assessment and evaluation, and teaching.

In teaching individuals, Stonier (1982) has listed the following advantages of using the computer:

1. The computer is interactive. Unlike books, tapes, films, radio and television, what happens next is largely determined by the user. This gives the student a sense of personal control. In addition, by eliciting a response and involving motor activity, the student becomes actively engaged in the learning process.

2. A personal computer can provide tailor-made instruction. Over the next few years, software, like hardware, will become sophisticated, and cheap computers can provide individual tutoring and attention to a level not possible in most classroom situations.

3. A computer has infinite patience. It doesn't care how slowly the user responds or how often the user makes a mistake.

4. The computer provides privacy. Students, or for that matter teachers, can make mistakes without anyone seeing them. It is easy to erase everything and start again.

5. Good programs never put the student down. Instead, good programs provide effective positive reinforcement.

6. Working with computers favours a more positive attitude towards mistakes. Users designing new programs are not 'right' or 'wrong'. Rather they need to discover the 'bugs'. Mistakes are not something to be ashamed of, but to fix.

   Learning about mistakes and how to correct them leads to new insights about processes. With sufficient experience children develop a new information skill: advanced problem-solving capabilities.

7. Papert has also pointed out that students learn the skill of analysis by reducing complex problems to 'mind-sized bites'. 'It is possible to build a large intellectual system without ever making a step that cannot be comprehended'.

8. As an extension of that process, learning to program a computer tends to favour an organised intellectual approach to problems with flow charts systems thinking, and 'logicacy'. Just as certain sports favour the development of co-ordination and particular muscles, so does working with the computer favour the development of certain intellectual faculties.

9. Working with the computer, like crossword puzzles and chess, is 'mind play'. Among other intellectual qualities, the computer fosters precision and attention to detail.

10. The ability of the computer to simulate a wide variety of processes such as chemical reactions, steel plants, ecosystems, demographic or economic changes, means that it becomes possible to train students to think 'laterally' and across traditional boundaries. Whether training astronauts, top level managers, or chemistry students, the use of computer simulations is probably the most cost-effective method to educate decision makers.

11. Computers can provide more interesting and understandable material because of the ease of producing animated material. Because the student can create his/her own, it becomes possible to invoke the student's own creativity and imagination.

This area of education is growing so quickly that the best advice this book can give is that you should seek a meeting with your computing experts to discover the present state of the technology.

12.4 SUMMARY

This chapter dealt with a range of resources which can assist instruction. General principles governing the selection of resources are considered, and then the most commonly used instructional aids—the overhead projector, the chalkboard and whiteboard, photographs, films and videos, printed sheets, charts, models and samples—discussed. The merits of each approach are assessed, and suggestions provided for using each instructional aid in TAFE.

REFERENCE

Stonier, T. (1982) 'The revolution in education', in 9th Australian Annual Computer Conference, Hobart, 1982.

CHAPTER THIRTEEN: BACKGROUND RESOURCES (L. FIELD)

13. PURPOSE OF THIS CHAPTER

The purpose of this chapter is to describe some of the technical resources, people, and organisational sections which form a background to your teaching. This is an ambitious goal, because the resources available to you—libraries, counsellors, information technology, and many others—are each specialised professional areas with their own literature, terms and techniques. In relation to our model, these resources support every aspect of the TAFE teacher's role.

Given the range of background resources available, all that will be attempted here is to provide a brief overview, in the hope that it will interest you sufficiently to make your own enquiries, and to explore the network which is available for you.

The chapter is set out as follows:

13.1 PEOPLE AS RESOURCES

Teaching colleagues

For the new TAFE teacher, there seems to be so much to learn, that things can seem a little overwhelming at times. Here is how one new teacher expressed this feeling of uncertainty:

> What have I got myself into? Thrown to the wolves, knocking knees, mouth full of teeth, sweat pouring out, clammy hands.

Don't worry, you are not alone. This advice applies particularly to your finding out for yourself how best to operate within TAFE. Of course, there are no shortages of written policy, regulations and circulars, but as anyone knows who has worked in a large, complex system such as TAFE, finding out which rules are most appropriate is an important part of your orientation, and one in which advice from other, more experienced teachers can be of great assistance.

Some new teachers find it hard to admit they do not know something, and to ask for help. This is especially true when their previous work as foremen, engineers, experienced technicians, and so on, required them to give advice or to carry out jobs without assistance. Rest assured that in TAFE, it is normal practice to ask for help.

Apart from educational and academic matters, most new TAFE teachers need technical help in some areas. Many TAFE teachers come from areas where they have specialised expertise, but are required to teach in quite broad trade or technician level areas. In some colleges, there are formal tutorials organised for new teachers, to familiarise them with a broad range of material which they are then required to teach. In other colleges, you may have to organise this sort of assistance yourself.

In most cases, other teachers will offer a great amount of support to you during this initial period. The term 'other teachers' includes other beginning teachers, more experienced teachers, and head teachers. Let's look briefly at the sort of assistance you can expect from each group.

Other beginning teachers will help you to watch your progress during the early period of TAFE teaching. After all, you will be wanting to keep a check on how you are going relative to others, with assignments, lesson preparation, coping with students, and still managing your personal life. Informal contacts with your peers help this process considerably. More generally, other beginning teachers provide a general sense of comfort and support, which is the reason why so many lasting friendships are formed during the teacher training period.

Not surprisingly, however, when it comes to things like the meaning of new TAFE jargon, lesson preparation, the filling out of forms, and so on, other more experienced teachers can offer the most help.

Your head teacher will be able to advise you on how to go about remedying deficiencies in your expertise. Head teachers are also the best source of information in areas such as discipline, general curriculum matters, administrative arrangements, and so on. Senior staff are busy people, and may give the impression that they do not want to help—but in general, head teachers can draw on both their own wide expertise and the great flow of information which comes to them to advise you in a wide range of circumstances.

How do you prevent a new teacher from worrying that if he seeks help, he will be considered a poor teacher?

Counsellors and counselling

As a TAFE teacher, you will sometimes be exposed to situations where students are troublesome, worried, or asking for help. Here are three case studies to illustrate this.

Case 1

Greg (19) is a student in the Automotive Engineering Trade course and is completing his final year. He was involved in a serious car accident during his first year at College, and was absent from the course for some time. He returned and managed to pass years one and two, although only marginally. He is now becoming very demanding in class through attention-getting behaviour (smart comments, etc.) and his motivation and performance in the course seems to be dropping. His behaviour is disruptive to the class and he is falling behind in his work.

Case 2

Tracy (20) is a young woman who feels she has been 'railroaded' into a hairdressing apprenticeship by parents who were anxious for her to get a secure trade and job.

As Tracy goes through the apprenticeship course she worries about things like:

'Will there by more to my life than clipping hair?'
'Can I see out another two years?'
'Do my teachers understand my attitude?'
'Have I got the 'guts' to escape?'
'Would it improve if I change employers?'

She finally raises some of these issues at a casual student-teacher get-together.

Case 3

Annie (20) is a full-time student in Stage 1 of the Fashion Technology Certificate course. She is of Asian (Chinese) background, has been in Australia for 2 1/2 years and is a permanent resident. Her command of English seems good although she speaks with a heavy accent and at times is difficult to understand. She is a quiet student and does not appear to mix much with her classmates. She seems motivated and her attendance is good. She performs very poorly, however, experiencing serious difficulty in understanding instructions, gets confused, and makes silly mistakes despite considerable individual attention and instruction. As her teacher, you begin to doubt whether she can handle the course and you find that you cannot afford to give her the individual attention she seems to need.

Stop for a minute and ask yourself what you would do in each case.

There are several ways in which you can react to each situation, namely:

- you can do nothing
- you can try, at least as a first step, to talk with the student individually
- you can involve the college counsellor, either by referring the student or by seeing the counsellor yourself and getting advice about how to handle the situation.

Let's look at each of these options in a little more detail.

Do nothing

Some teachers would argue that it's best to do nothing because the types of behaviours described in each scenario are not of concern to teachers. They may well feel that students are best left to sort out such matters on their own.

To some extent, of course, this is true. Personal matters are the responsibility of students. However, when personal situations or feelings exist which directly affect student behaviour and learning in the classroom, then it's not so easy for the teacher to dismiss them.

Talk to the student individually

If you talk to the student individually, you are really employing counselling skills, whether you are aware of it or not. If this is what you decide to do in a particular situation, then you will need to give some thought to how to handle it. A small book by John Gurr, Student counselling skills for TAFE teachers (available from your teachers' college) offers some excellent advice, which is summarised here.

- Always listen carefully to what the student is saying.
- Be slow to offer your advice. If you find yourself saying, 'If I were you I would . . .', you are not counselling, you are telling.
- Explore alternatives with the student, but avoid saying what you think. Leave it to the student to decide which, if any, alternative is acceptable.
- Give the student truthful, reliable information on which to base decisions. For example, if the year is 1986, then you ought to refer to the 1986 course handbook rather than the 1983 one.

- If the student cannot sort out the issues or personal difficulties, or if the student needs to be formally tested, then refer him or her to the student counsellor. In some States of Australia there are laws which limit the role of the teacher in administering intelligence and personality tests to students.
- Do not promise confidentiality to students; by law you cannot keep such a promise. The most you can offer is to use discretion in relation to those things the students disclose to you. A Court of Law can order you, under oath, to disclose information, but do not give information regarding a student to the police or anyone else without consulting a senior person within the college.
- Try to avoid recording on file any information which could damage a student's life chances, or could work against him or her. Many people have access to student files, and they may not treat the information with the same discretion that you would exercise.
- Don't be discriminatory to students in relation to sex, age, ethnic background or any other factor. The TAFE sector boasts of equal opportunities for learning for everyone.
- Remember that students have rights. Apprentices are adults by law when they reach 18 years of age. Apprentices are also protected by statutes which govern their employment. Other statutes may apply to students other than apprentices.
- Remember, things are not always what they seem to be, and students may not be entirely truthful in the counselling situation. At times students may supply answers to you that they think you expect rather than tell the truth. When students come to trust you they are likely to disclose 'the way it really is'.
- Finally, always follow up the contact with the student, as a means of offering encouragement or further counselling support. Make contact with the student again even if it is just to pass the time of day. It is an opportunity for the student to seek further help if it is required. Try to avoid giving the impression of 'chasing' the student, as this may be embarrassing for him or her.

Involve the student counsellor

A counselling service is available at many TAFE Colleges, and you would be wise to enquire about what is available at yours. This is particularly so because some student counselling services are poorly publicised, or are available for only a limited number of days each week. Many students may be unaware of this useful service, and so you can help by letting students know about the service when appropriate.

These days, TAFE Counsellors come from differing backgrounds. Most, however, have formal qualifications in either psychology, social work, counselling, education, or teaching. Many are qualified in two or more of these areas. As well as having an understanding of the many different kinds of problems faced by students, they are also well equipped to advise teachers on how to deal with students with particular problems. Counsellors also have links with a variety of other agencies and experts, and so can refer you to expert help.

TAFE counsellors have a particularly broad range of responsibilities. Their main function involves face-to-face counselling of enrolled and prospective students, which can fall into any of the following areas:

Personal issues: These range from worries which may be relatively minor and short term (for example, stress associated with examinations) to major behavioural and psychiatric problems. Personal difficulties relating to drugs, alcohol, sex, bereavement and other family crises, and peer relationships are dealt with by college counsellors fairly regularly. Counsellors also assist people with physical handicaps, and those simply wanting to improve their health or confidence.

Vocational issues: These include career counselling, dealing with unemployment, job seeking skills and career information.

Educational issues: College counsellors can help with the assessment of learning difficulties and action designed to overcome these difficulties. They can also advise you on how to handle motivation problems, classroom management, study difficulties, and so on.

Information: The counselling service has access to a great deal of information about TAFE courses, community helping agencies and government services.

Of course, there is some variation in the range of services a particular counselling unit covers. This relates to the size of the unit, other services available in the college and areas of specialisation of the counselling staff in the unit. Despite this, you will find college counsellors can offer a great deal of help.

13.2 THE TAFE LIBRARY

The main function of libraries is to serve teachers and students. Because of this, you will find librarians some of the most helpful people in the TAFE system. They are only too happy to give you support with jobs like those described below.

- Preparing instructional aids and materials
  When you discover there is a need for certain materials in class, do not automatically assume that you will have to create them yourself. It is often surprising how much resource material is available in vocational education, and your librarian will help you to locate it. Even if such a search does not lead to the materials you need, and you have to arrange for them to be produced yourself, at least you will be confident that you are not 're-inventing the wheel'.

- Researching teacher education assignments
  It is often more convenient to get books and other materials for assignments from your local college library than from your teachers' college. Remember also that individual TAFE college libraries are part of a wider network which includes other TAFE colleges, CAEs, municipal libraries and special libraries. This means that material borrowed can be on inter-library loan, or through reciprocal borrowing schemes. Both of these alternatives can be very convenient, particularly if your own library has a limited range of material. You should check your college's inter-library loan and reciprocal borrowing arrangements with your librarian.

- Researching teaching notes
  Most new TAFE teachers have technical areas in which they have limited expertise, so it is necessary to do extra preparation in these areas. When you need to do this kind of research before a class or before planning a course, it is advisable to get your college librarian's help. TAFE librarians are generally very knowledgeable when it comes to researching specialist technical literature.

- Keeping up to date
  Now that you are working in TAFE, it is important that you keep abreast of changes in your technical field. TAFE libraries attempt to assist in this area by purchasing the latest relevant materials in each field, as well as by subscribing to a range of journals. (In fact, regular browsing through technical magazines is one of the best, and most popular, ways to keep up to date.)

  Of course, there may be deficiencies in the reference materials covering your specialist areas. If so, let your library staff know—they will generally be able to purchase the material needed, or will help you to locate it.

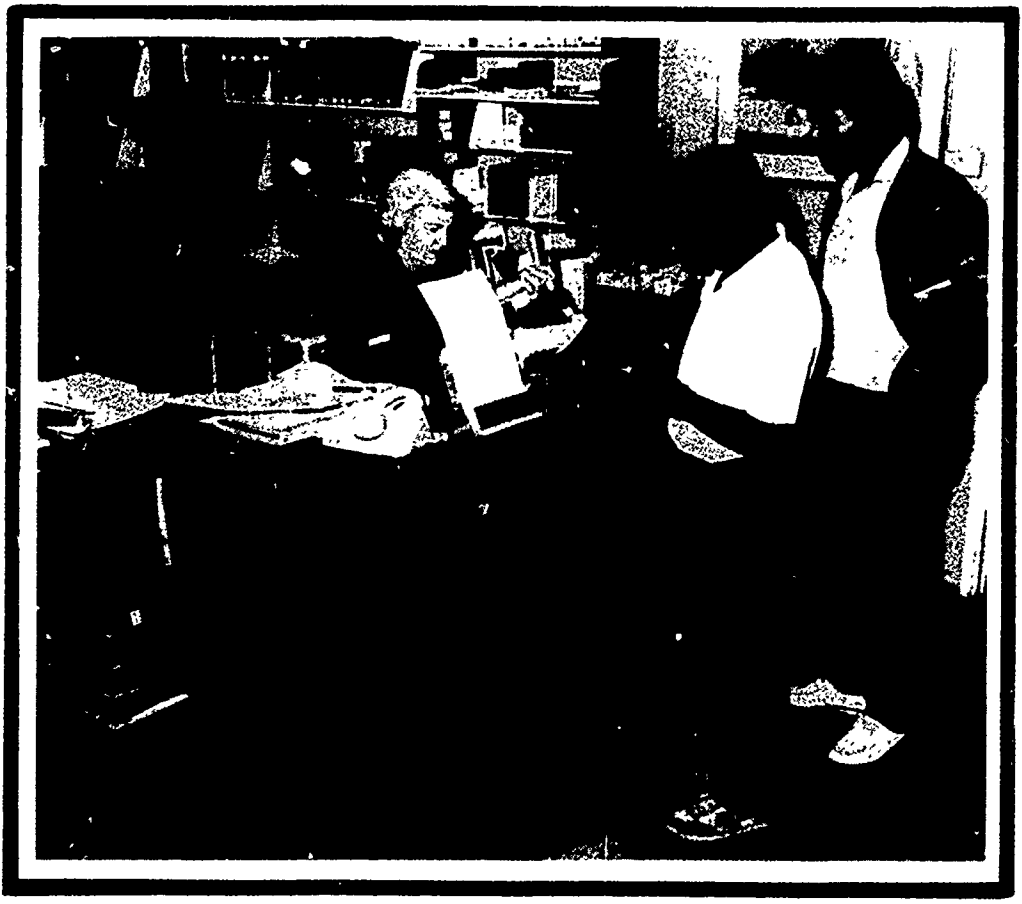


Figure 13.1 A TAFE library

Another area in which you will need to keep up to date is the educational field. Your teacher training period will help to familiarise you with the current state of technical and further education, but TAFE operates in an environment of rapid change. In the years to come, developments such as educational computing and information technology, the structure of industry and its need for trained personnel, and changes in many other areas, will have a marked impact on your work. You will need to keep informed about these changes.

One of the best ways to keep track of education developments which form the background to TAFE teaching is through the National TAFE Clearinghouse.

The National TAFE Clearinghouse provides information on published documents about technical and further education in Australia. A clearinghouse in each State and Territory collects this information, which is then collated by the National TAFE Clearinghouse and regularly published in its publication Initiatives in Technical and Further Education. The information published in Initiatives is also available through the Australian Education Index database on AUSINET. Your librarian will be happy to explain how to access the database. Initiatives is widely distributed through the TAFE system. It includes entries on research reports, evaluation studies, curriculum materials, results of surveys, workshop/seminar/conference papers, theses and bibliographies.

Documents found in Initiatives are made available for distribution (usually in microfiche format). The front of the Initiatives booklet explains how to request a copy. Again, your librarian will be only too happy to assist.

One way to tell others about your research and development activities is to contribute to the Clearinghouse. Contributions may be made to the National TAFE Clearinghouse by completing and forwarding a TAFE Clearinghouse submission form, together with two copies of the material, to your State/Territory Clearinghouse Officer. These forms can be obtained from your local Clearinghouse, TAFE College and most major TAFE libraries.

Other ways of keeping up to date include attending in-service courses run by TAFE staff development units and by CAEs, joining your (relevant) professional association and attending its meetings and reading its journals, and seeking ways to liaise with local industries. The last chapter of this book also makes suggestions concerning continuing learning.

- Encouraging students to use the library

With the great upsurge in specialist technical information available in recent years, it is important that students also develop the skills and habit of using libraries properly. You can encourage that by your attitude to library work, and by including relevant material from the library in your lessons.

So, there are plenty of reasons why you should get to know your library and its staff. If you have not made much use of libraries in recent years, you will notice when you first visit your college library that things have changed. The modern library focuses not just on books, but on a wide range of learning materials, including video-tapes, slide-tape sets, kits, journals, and so on, as well as physical facilities such as seminar rooms, study rooms and audio-visual areas. The increasing use of the term 'resource centre' instead of 'library' reflects this broadening perspective.

Information technology has also had a marked impact on TAFE libraries. The card catalogues of previous years are being replaced by machine-readable systems. In the initial stages this has been done through the use of microfiche catalogues, giving the author, title and subject, just as they are given in the card catalogue. However TAFE colleges are gradually installing OPACS (On-Line Public Access Catalogues) operated through a computer terminal and on-line circulation which will replace loan cards with a system using bar codes. This system will be much quicker, more up to date, and provide much easier subject access.

Some libraries also have facilities to retrieve information on a specialist subject (e.g. the use of robotics in automotive engineering) from such sources as the American firm DIALOG which contains data bases with access to cover 100 million records. Relevant data bases such as The Australian Education Index are available through the Australian equivalent AUSINET. These are efficient and cost effective means of researching areas of interest. Your librarian can advise you of the availability of this service.

Finally, the simple photocopier has also influenced library use. No longer do you need to make written copies of relevant information. While photocopiers are a valuable tool if used properly, they do cause some beginning TAFE teachers worry because of fears about infringing copyright. But, as Figure 13.2 indicates, single copies of small sections of published works are permissible, as long as they are intended for your own research or private study.

13.3 EXTERNAL RESOURCES

The individual TAFE college is one small organisation in the midst of a complex array of groups which influence TAFE. Of course, no individual teacher needs to know about all of the groups. It would be more realistic to expect that, as you become more knowledgeable about TAFE, you will gradually develop insight into the groups which are relevant to you.

COPYING A PERIODICAL ARTICLE

How much of the article?	Multiple copies permitted?	Single copy permitted?
Insubstantial portion (up to 2 pages of the article, or up to 1 per cent of the periodical, whichever is greater, provided the whole article is not copied).	YES, PROVIDED • the article is not a musical or artistic work; • the copies are for a course of education provided by an educational institution; • the copies are made on the premises of that institution, and • you have not copied from the same article during the previous 14 days. In copying the text you may copy any *related* artistic works. (Section 53A)	YES, any person may make a single copy of the whole or part of a periodical article, for research or study. (Section 40, fair dealing) Such a copy may be supplied by a library at a user's request. PROVIDED: • the article is not an artistic work; • the user protects the librarian by signing a declaration (which confirms the user requires the copy for research or study only, and the library has not previously supplied the user with a copy of the same material), • the library files the declaration, as prescribed, for inspection by copyright owners/agents, and • the library arranges notation of the copy In copying the text, related artistic works may be copied (Section 49, library user)
Beyond an insubstantial portion, up to and including *the whole of the article*	YES, PROVIDED your institution has arranged for. • notation of each copy, • a record of the copying job, and • payment of a copying royalty if the owner claims (Section 53B statutory licence)	

NOTE Do not copy more than one article from the same issue of a periodical unless all the articles you want are related in subject matter

Figure 13.2 Copying a periodical article

As a new TAFE teacher, the main groups which influence your work are those concerned with curriculum research and development, and of course commerce and industry. Let's look at each area.

Curriculum research and development

Curriculum research and development can be thought of as taking place at the national, State and local levels. At the national level, there is the TAFE National Centre for Research and Development. Based in Adelaide, it acts as both a funding body as well as conducting and co-ordinating its own research. Central to the National TAFE Centre's activities are the following:

- conducting and commissioning research projects. Current project reports deal with resource development, technological change, assessment and evaluation, and many other areas. The National TAFE Centre's staff have carried out some of these projects while others have been done by researchers or teachers in each State and funded by the Centre;
- operating the National TAFE Clearinghouse. The purpose of this centre is to disseminate information on TAFE research and development throughout Australia. Access to clearinghouse material is discussed earlier in this chapter.

Free brochures about the Centre and its activities can be obtained by writing to TAFE National Centre for Research and Development Ltd., 296 Payneham Road, Payneham SA 5070.

At the State level, there is a series of committees which are important in deciding on the content and structure of courses. Each State differs, and there is no real need to know about the way each committee operates in the curriculum development process yourself. However, these committees do form an important background to your teaching, and it's helpful to know a little about the various types. These include:

- a central committee or committees, whose job it is to make decisions about course changes for courses run throughout the State;
- course advisory committees (sometimes called 'study area' committees or 'program' committees). Course advisory committees exist for each course or course area. Members of a typical advisory committee include industry representatives, people from the TAFE teaching school, and other interested people from relevant Government departments, licensing authorities, trade unions, professional associations, and so on. Committees meet at least once per year, and monitor the content of courses. The committee serves as a sensitive barometer of changes taking place in industry, and industry members are quick to suggest changes to course content in order to include new practices or technology.

Curriculum development also takes place at the local level. Sometimes this just means a teacher is asked to develop a short course to be offered in the district only, or it may imply a project of wider scope, involving:

- college or regional committees, which are made up of representatives of the local community and of industry, as well as local College representatives. Their focus is primarily on courses of particular local interest, and on using the facilities of the college most efficiently;
- local special purpose committees of teachers. Within the college itself, small committees or working parties are often set up to do a particular job. There is a range of different committees which fit into this category. For example, some colleges or teaching schools have resource review panels to review new instructional materials, and make recommendations. At others, small committees have been set up to look at shared facilities, outreach activities, remedial education needs across teaching schools, and so on.

These groups and activities at the national, State and local level are staffed or supported by curriculum experts in each State. Part of the job of these people is usually to provide advice to teachers. The number of such experts, their availability and their degree of specialisation, varies from State to State, but, in general, you can expect to find people with expertise in:

- external course development, for courses conducted by correspondence;
- the design and production of instructional resources like charts, overhead transparencies, video-tapes, workbooks, and so on;
- the range of existing hardware, software and resources which already exist both within TAFE, and within outside industrial and educational organisations;
- the design, interpretation and evaluation of assessment schemes, such as written tests, practical tests, multiple choice item banks, and so on;
- interpreting changes such as population shifts and technological developments likely to influence the content and structure of courses;
- conducting need and demand studies, programme evaluations, and similar curriculum research activities;
  - the design of course documents such as syllabuses;
  - the educational needs of special groups such as Aboriginals, women who have been out of the workforce for some time, the handicapped, and so on.

You should try to find out about the curriculum experts available to you. In some cases, they will be located within the college or school, while in others, they will be at some centralised location. You will find they will be able to help in a range of ways, from providing a current copy of a syllabus or the layout of a test to giving detailed advice on how to go about developing a set of instructional materials or designing a new course.

Commerce and industry

It's important that TAFE teachers maintain their contacts with commerce and industry. There are several reasons for this. First, such contact ensures that courses are kept up to date and that trends are anticipated. Second, it enables teachers to keep an eye on apprentices or other TAFE students, to make sure that the TAFE programme is adequately supporting the trainee's development on the job. And third, close contact can alert the TAFE teacher to either individual jobs, or to employment growth areas which can lead to unemployed students getting work.

Keeping in touch doesn't just happen; it needs conscious effort. Some TAFE teachers make a point of spending a definite time—perhaps a few hours each week—liaising with the organisations they serve. The occasional brief visit or telephone call can help maintain important relationships.

There is also a variety of more formal means of learning about what is happening in industry or commerce. TAFE departments offer financial support to selected teachers so that they can return to the industry for a period of work experience. The focus of such a scheme can be either on gaining a broader background, or on deepening existing knowledge in important areas.

Field activities are also an important means of keeping abreast of change, and are essential features of many programmes. Such visits can illustrate at first hand the latest processes or specialised pieces of equipment. And, remember, it is part of TAFE's responsibilitiy to see that students are exposed to a broad range of knowledge and techniques in each course area. Carefully planned visits can help broaden the perspectives of students employed in small or specialised firms.

Conducting a successful visit takes quite a lot of careful planning, however.

The steps involved in planning an industry visit are listed below.

- Decide on the aims of the visit(s).
- Ask teaching colleagues and industry contacts to find out which companies might be appropriate to visit, and select a list (in order of priority; not all firms might agree to your visit!).
- Ring each firm. It's probably best to speak to the manager or, in a large firm, to the personnel manager. Emphasise that you are from TAFE (and not from a high school).

- Suggest a few possible dates, and indicate the duration of the visit and the things you want to see. If possible, do not leave these decisions up to the firm's representative.
- Find out what forms need to be filled out. Typically, students will need to request permission to go on the visit, and will need to sign a disclaimer in the event of an injury away from college.
- If at all possible, you should visit the site first yourself before the students. In that way you can realistically estimate what's worth seeing, and how long it will take.
- Organise transport. It is much better if the whole class can go together in the college bus, or even to hire a bus, than for students to take their own cars. By going together, you can make sure that all students arrive on time at each site.
- Make sure that students have specific things to do or look for at each visit—field work is not just a day out. Students should do some written work during or after each visit, such as summarising what they have seen, and answering lists of specific questions which you have distributed.
- Finally, after each visit, you should send a brief thank you letter to the person you dealt with at each site.

13.4 INFORMATION TECHNOLOGY

Information technology is not an easy term to define, because it covers a wide range of activities rather than a single concept or process. A useful definition is shown below. It is an adaptation of the UK Further Education Unit definition:

> IT (information technology) is the acquisition, production, transformation, storage and transmission of data by electronic means in forms such as vocal, pictorial, textual or numeric, such as to facilitate the interaction between people and between people and machines. IT also includes the applications and implications (social, economic and cultural) of these processes. (Hall, et al., 1985)

Although this definition includes a range of new types of technology, the most significant component of new information technology in TAFE in the years to come will be the computer. In the short term, computers will have a direct impact on TAFE teachers and teaching, because they can perform such a range of functions, including:

- performing calculations quickly
- teaching about computers and computing
- individualised instruction
- simulating a variety of technical and environmental conditions
- performing tedious administrative jobs
- storing and retrieving information.

Let's look briefly at each of these functions, and try to assess the sort of impact they're likely to make on TAFE teachers.

Performing calculations quickly

This was the original, and in some cases, only, role of the computer in education until recent times. Computers are well suited to carrying out complicated calculations, drawing graphs, and carrying out statistical tests. In areas such as engineering and biological sciences, they are already becoming indispensable.

Teaching about computers and computing

Every TAFE system has subjects such as Computer Science or Computer Programming in the Curriculum. The need for basic computer literacy is not confined just to engineering areas, but is affecting an increasingly large number of course areas. Many TAFE teachers have recognised this in recent years, and as a result, they have done computing courses through TAFE or their teachers' college.

Individualising instruction

Computers are very useful for courses which can be packaged in a computer assisted learning (CAL) mode. In a typical CAL course, individual students interact directly with the computer, which is programmed to follow a certain pattern of questions and answers. With expected refinements in technology in the years to come, computers will be able both to talk and understand language, thus speeding up and simplifying the student-computer interaction. CAL is particularly applicable where the subject matter has a limited number of correct answers, and in remedial work in areas such as Mathematics and English.

Simulating a variety of technical environmental conditions

Given sufficient information to draw upon, computers can extrapolate from a limited amount of data. Here is an example from a TAFE class.

Suppose, in a chemistry subject, students are required to take a series of readings related to a complex industrial process which goes on for several hours. The session's objectives might be to enable students to take the readings (which they would have learnt to do after only a few tries) and for them to be aware of the trend in the complete set of readings. These objectives could well be achieved by students taking a few readings, feeding them into a computer equipped with a reference bank of results from a series of such experiments, and getting the computer to complete the readings and graph the result. In this way, the sessions objectives could be achieved in a very short time.

Performing tedious administrative jobs

Computers have enormous potential in the overall management of a college, in areas such as timetabling, planning, purchasing, keeping track of stores, budgeting, and so on.

Individual teachers are also finding a variety of tasks which computers can simplify or take over completely. For example, they can:

- generate tests (from stored item banks), and then mark them and analyse the results
- take into account information about an individual student or the structure of the course, in order to provide individual guidance for courses about the best way to do a structured set of course materials or modules
- store and update records of test performances and progress through a course
- analyse the report on the operation of a course as a whole, or on specific aspects of it.

Storing and retrieving information

The establishment and operation of vast computerised repositories of information such as DIALOG or AUSINET which are accessible via computer, have been discussed earlier in this chapter. Data bases such as these have revolutionised the process of tracking down information for research and teaching purposes.

Some TAFE teachers already use computers in a related, but more modest, way to manage data. It is a relatively simple matter to use computers to index and store any material used by an individual teacher such as teaching aids, references, samples of students' work, students' marks, and so on. Access to such material is easy, and if the material is superseded, it's very simple to modify or replace.

Clearly, the range of functions which computers perform now and will perform increasingly in TAFE means that they will have a major influence on the role of the TAFE teacher But there's another important reason why computers are having such a strong impact. The majority of TAFE courses are designed to reflect the needs of students in a range of industrial and commercial areas, in which computers are playing an increasingly important role, as the following list will indicate.

- Drafting: With the widespread introduction of computer aided drafting (CAD), there has been an important change in both the demand for trainee draftsmen and in the skills which draftsmen require.
- Manufacturing: Many manufacturing plants have restructured their operations to incorporate sophisticated electronic control systems, robotics, and so on. The term for these new systems is computer aided manufacture, or CAM. As with CAD, CAM has had major effects on the demand for employees in areas like boilermaking and sheetmetal works, as well as changing the nature of the work itself. Far fewer tradesmen are required in these areas, and many of those being retained are finding it necessary to upgrade their skills in order to operate the new equipment.
  Accounting: Today's accountant needs to have a first hand knowledge of how to use computers for financial planning and management. Similarly, many people involved in small business, when they undertake TAFE courses, expect to acquire practical experience in financial management using personal computers.
- Typing: The typist's job has been significantly changed by the development of word-processors, which allow the typed copy to be stored on a disk or similar medium, and modified as required. When multiple copies of a document are needed (for example, when preparing building specifications or typing copies of legal documents), or when material requires several drafts, far less typing is required. Once again, this means fewer new typists, plus the need to re-train existing ones.

These four areas, while very important, are really only the tip of the iceberg. In almost every area of work, from fashion to farm management, from panelbeating to plumbing, the new information technology is starting to have a major impact.

Problems for TAFE

The period of transition to more sophisticated technology raises a number of difficult issues for TAFE. Over the next decade or two, these are some of the issues facing administrators and educators in TAFE:

- Student access: The cost of the technology is very high, and TAFE departments around Australia have yet to sort out how to set up systems which allow access by the huge numbers of students spread across a range of locations. Yet that is exactly what is currently needed.
- Technological development: Judging by past experience, developments in information technology are being introduced at an even faster rate than before. If TAFE is to keep up to date, changes in the administrative structure, in areas such as purchasing and budgets, may be needed to allow the necessary hardware to be bought. Similarly, course development methods will need to be improved, especially if software for the new technology is to be produced in-house.
- Redundancy: An important consequence of the current changes in industry, which affects TAFE teachers and students is the number of areas (such as drafting, some engineering trades and graphic arts) where the need is diminishing for newly trained people, and therefore for TAFE teachers. What should TAFE do with the redundant teachers? At the moment, some TAFE colleges have adjusted by reducing their use of part-time teachers, and by attempting to re-train existing permanent teachers.
- Standardisation of courses: Software for the new technology is very expensive to produce, especially if it includes video material and artificial intelligence based computer programs. Once designed, it is really only worth the expense if it is used for a reasonable time and can cater for a large number of students.

The implications for TAFE teaching are that, while the material that is produced can be expected to be of a high standard (with careful attention having been paid to avoiding errors and distortions), there will be less opportunity for regional variations in any material to be taught using the new technology. Under such a regime, variations from the norm, or courses designed for small groups or for a short-term need, will have to be modified to accommodate these more conventional methods of teaching.

13.5 SUMMARY

This chapter described some of the technical resources, people, and organisational sections which provide a background to teaching in TAFE. Four categories of resources were considered:

- 'people as resources' which includes the sort of help a new TAFE teacher can expect from other people in the TAFE system, with emphasis on teaching colleagues (teachers, head teachers, and so on) and college counsellors;

- 'the library/resource centre' which covers such areas as the ways in which records are stored and located, how students may be encouraged to use the library, the function of the TAFE National Centre, and copyright;
- 'external resources' which covers the various levels of TAFE—local, State and national—and gives emphasis to the groups and individuals forming a backdrop to the content and structure of TAFE courses. It also deals with some of the resources outside the TAFE system altogether, and discusses how these can be included in courses via field work.
- 'information technology' which deals with recent developments in information technology (and particularly the computer) and looks at their ongoing impact on the TAFE classroom.

REFERENCE

Hall, W. C., Hayton, G., Sandery, C., & Davis, R. (1985). Information technology within traineeships: Options for TAFE-based courses. Adelaide: TAFE National Centre for Research and Development.

14. PURPOSE OF THIS CHAPTER

The teaching process model described in Chapter 2 showed assessment linked to:

- course aims
- content
- ways of teaching
- organisation of content.

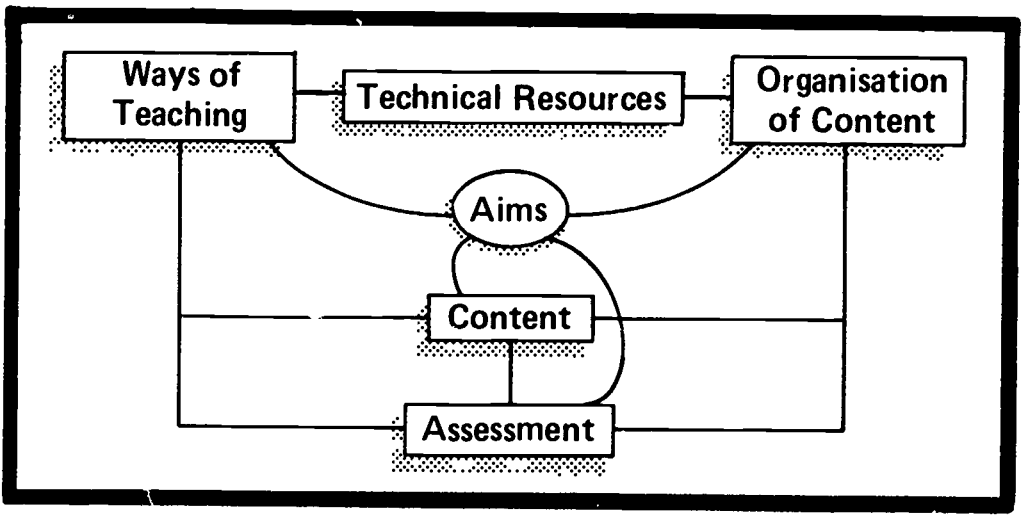


Figure 14.1 A model of the teaching process

These factors can influence what is assessed and the kinds of assessment procedures used. For example, if your teaching emphasises practical activities, then your course aims must include practical skills; and the course content, and the way that content is organised, will be chosen to achieve the aims. The assessment for your course must, therefore, include a practical component. On the other hand, a highly theoretical course need not include the assessment of practical skills. However, if you want to discover if a student can wallpaper a room, then an essay on wallpapering would not be an appropriate form of assessment!

Unfortunately, assessment is sometimes not closely linked to course aims, content, ways of teaching and the organisation of content, with the result that students are confused about the purpose of a course and the usefulness of its assessment. The purpose of this chapter is to explain how assessment can be a useful learning tool for students, providing valuable information to them about their progress. The chapter will also show that assessment can be a useful teaching tool, providing meaningful, helpful feedback to teachers, as well as helping them to plan the structure of their courses.

The definition of assessment used in this chapter is: the use of appropriate techniques to discover how successfully students have achieved course aims. The chapter is divided as follows:

A major part of the chapter is devoted to describing the main techniques of assessment and how they can best be used by TAFE teachers.

14.1 PURPOSE OF ASSESSMENT

Imagine that you are one of a hundred people who have applied to do a course which admits only ten students. You are asked to sit for a short entrance test and the results of that test are then used to grade all applicants. The top ten applicants are offered a place. This is one use of assessment. It is a non-educative, political use, where assessment is employed as a 'hurdle' to trip up nine-tenths of the applicants. No thought is given to the fact that most (perhaps all) of the applicants could probably do better in the course than the ten who are accepted. Nevertheless, society is satisfied because an 'objective' selection process has been used! That is one use of assessment.

Another use is for <u>educative</u> purposes. This chapter strongly supports the educative uses of assessment, where assessment is seen as an essential component of the teaching process, providing feedback to students and to staff. The educative purpose of assessment in any course should be to show students and staff how successfully course aims have been achieved. For this kind of assessment to be effective, three questions need to be considered:

- What should be assessed?
- How often should the assessment occur?
- What techniques should be used?

What should be assessed?

If the educative use of assessment is one you are prepared to adopt, then clearly it is important to know the course aims. The answer to the question 'What should be assessed?' then becomes: the level of achievement of each one of the aims by each student.

To plan appropriate assessment, in order to answer the question, a specification matrix can be useful in deciding what weightings should be given to the different kinds of assessment techniques, and which techniques should be used for each one of the aims. An example of a specification matrix is shown below.

AIM	TECHNIQUE				TOTAL
	Multiple-choice test	Practical assignment	Interview	Written assignment	
A	10	10	-	-	20
B	-	10	10	-	20
C	10	-	-	10	20
D	20	-	-	-	20
E	-	10	-	10	20
TOTAL	40	30	10	20	100%

This course had five aims, all of equal importance, and so each was allocated 20% of the total marks. It was decided that five assessment techniques should be employed: A multiple-choice test was used to assess three of the aims and 40% of the total assessment for the course was devoted to that test.

How often should assessment occur?

Until recently, many students were just examined at the end of their courses. Such a procedure did not provide the student with feedback, it indicated only whether a subject had been passed or been failed. There was strong objection to this and so changes were made but, as so often happens, the 'pendulum' then went to the other extreme and many colleges introduced wholly 'continuous assessment'. This became 'continuous harassment' in some courses, because students seemed to be assessed for most of the time (sometimes weekly).

The best way to answer the question 'How often should assessment occur?' is to draw up a specification matrix and decide when a particular course aim can be achieved by students. That is the best time to assess for that particular aim. Sometimes that will be after a term, or a year, or a week, or even after a single workshop assignment.

What techniques should be used?

Generally, no single technique can be used to assess every course aim. Sometimes teachers attempt to do this, but it cannot be supported because of the wide variety of aims for most TAFE courses, many of which demand different assessment techniques. The next section describes the most common techniques, the kinds of aims they can best be used to assess, and the strengths and weaknesses of each technique. In this last respect, the terms 'validity' and 'reliability' are important.

Both terms are discussed later in Section 14.3.

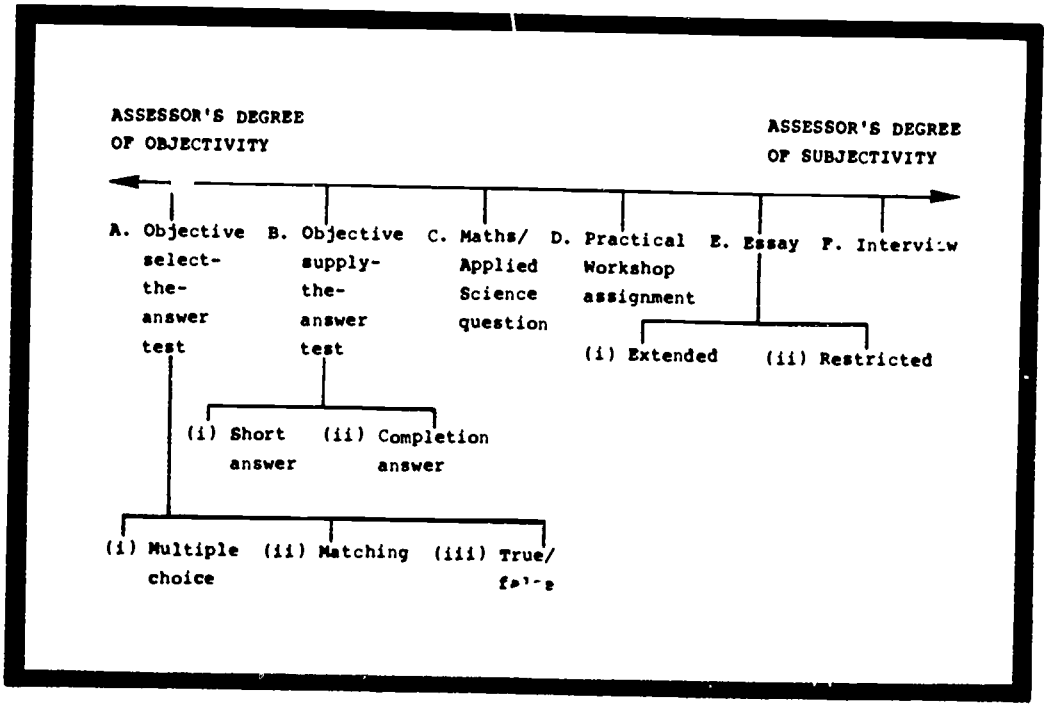
14.2 TECHNIQUES OF ASSESSMENT

The most common assessment techniques used by TAFE teachers are:

- objective tests
- practical exercises
- essays
- interviews.

In addition, questions of a more special kind are frequently set in mathematics and applied sciences.

A simple classification for these forms of assessment is shown below. It is based on the degree of objectivity/subjectivity used by the assessor. It should be remembered that (so called) 'objective' tests demand a high level of subjectivity at the setting stage.



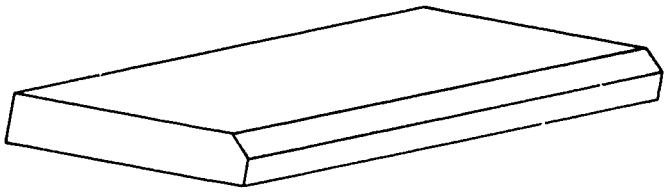
Projects (or extended assignments) frequently combine the extended essay with a practical workshop assignment and/or interviews.

Each one of these types of questions will now be briefly discussed and (where appropriate) examples given.

A. Objective, select the answer

i) Multiple-choice

Multiple-choice questions (or 'items') are called 'objective' because no knowledge is required in order to mark them. Indeed, they can be marked by a machine. The items consist of information, the question, and a set of alternative answers (usually four), only one of which is correct. An example of an item is shown below:



In the drawing, the shaded part of the board is called

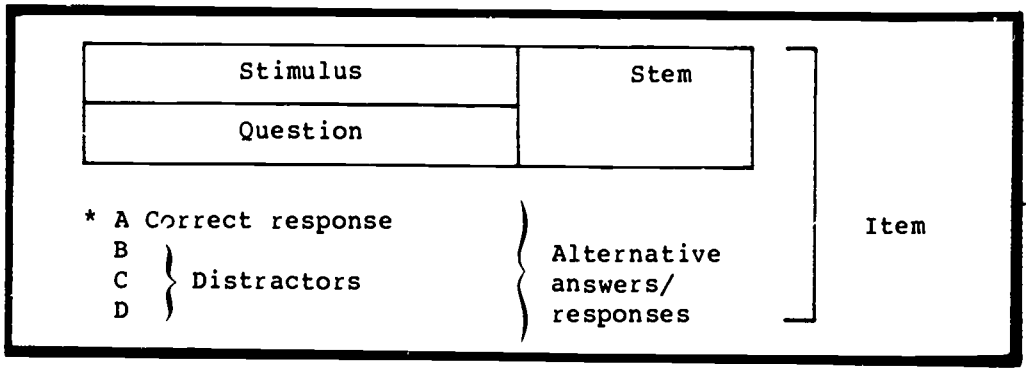
A *a bevel* *C* *a slant*

B *an angle* *D* *a chamfer.*

This example, and most of the other questions in the section, are taken from the TAFE National Centre for Research and Development's publication Student assessment: A handbook for TAFE teachers (P. Thomson). A detailed text like the handbook should be consulted before starting to prepare a test, as there are many pitfalls to avoid when writing multiple-choice items. The following generalisations should be borne in mind:

- only one answer should be correct;
- all choices should be equally plausible and of similar length;
- irrelevant information should not be given in the question;
- do not use double negatives (i.e. a negative in the question and a negative in a response);
- ensure that the alternative answers are grammatically consistent with the question.

There is a type of jargon associated with multiple-choice questions. The main terms are shown below:



In the multiple-choice example given above, the diagram is the stimulus, the question follows, and then there are four responses.

ii) Matching

Two lists are presented and students are asked to match information from one list with information in the other list. An example follows:

> Match all the fish dishes in List 1 with the appropriate sauces in List 2 by writing the number of the sauce in the box alongside the name of each fish dish.

List 1: Dishes		List 2: Sauces
sole Colbert	☐	(1) beurre noisette
sole Goujon frit	☐	(2) tomato sauce
plaice a l'Orly	☐	(3) beurre maitre d'hotel
grilled herring	☐	(4) tartare sauce
		(5) mustard sauce.

iii) True/false

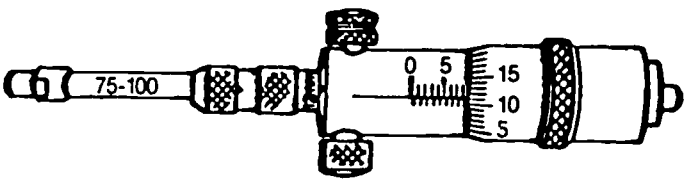
In true/false questions, students must choose between two alternatives, only one of which is correct. The alternatives can be yes/no, correct/incorrect, right/wrong, as well as true/false. An example follows:

> For every action there is an equal and opposite reaction T ☐ F ☐

B. Objective, supply the answer

i) Short answer

Students are expected to write one or two words, or a number, in response to a question. An example is shown below:



The reading on the inside micrometer shown is _____

ii) Completion answer

This is just an extension of the short answer question. A sentence is completed by adding the correct word, or words. For example:

Electricity was discovered by . . . . . .

Both objective 'select the answer' and objective 'supply the answer' tests can easily become tests which merely assess the ability of the student to recall isolated pieces of information. To assess understanding, or problem solving, a great deal of skill in preparing the test is required.

C. Mathematics/applied science questions

Many questions in mathematics and applied science have a high degree of objectivity in their marking. An answer, for example, can be either correct or incorrect. Skill is needed in checking the working, especially if marks are given for the most economical way of doing the calculation.

D. Practical/workshop assignments

Practical or workshop assignments are frequently set by TAFE teachers. However, a danger to avoid is that of assessing a written piece of work, which could just as easily have been produced outside the workshop. To avoid this, decide what aims are to be assessed and produce a check-list to allocate marks.

A skill sample test produced by the NSW Department of TAFE, School of Engineering Trades, followed by a marking guide for a skill sample test (courtesy of the AIS Apprentice Training School) are shown below.

A SKILL SAMPLE TEST: Construction of a Vee Pulley*

Aim. To turn an angular groove and produce a closely toleranced bore in aluminium.

Material: 60 x 32 Aluminium.

Safety: Keep hands clear of revolving parts.

Procedure: (Demonstrations will be given by the teacher.)

1. Set aluminium true in a 4-jaw chuck.
2. Face end.
3. Turn 58 and 36 diameters.
4. Turn vee.
5. Drill and finish the hole.
6. Cut the keyway.
7. Bevel, deburr and part-off.
8. Hold lightly by 36 diameter and skim parted face if necessary.

Feature	Requirements
Diameters	Concentric and within limits of size.
Lengths	Within limits.
Hole	Bore and keyway correct shape, size.
Vee	Correct shape and size.
Finish	As specified. No burrs or sharp edges.

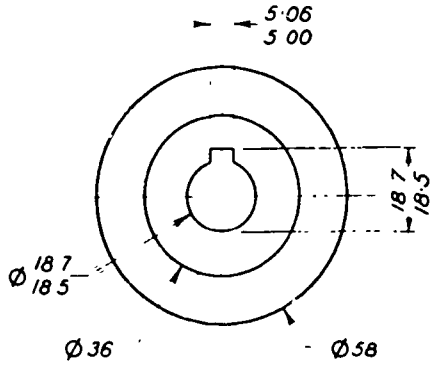
Issued subject to alteration pending determination of S1 surface finish symbols.

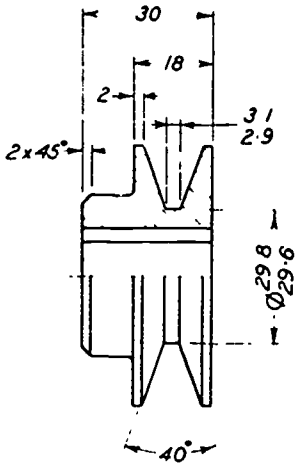
NOTE:
The student's interest, attitude and diligence towards his work, and towards the teacher's demonstrations MUST be considered in the assessment of this exercise.

Construction of a Vee Pulley continued - The Diagram

UNLESS STATED OTHERWISE DIMENSIONS ARE IN MILLIMETRES

3RD ANGLE PROJECTION





Tolerance ± 0·2 unless shown otherwise

Finish. ▽ all over

Surface finish symbols are expressed in micrometres

MATERIAL Ø60 x 32 Aluminium

MARKING GUIDE FOR A SKILL SAMPLE TEST:

Construction of a Soldering Iron*

A. Distribution of Marks

MARKS FOR SOLDERING IRON

Overall Bit Length	- 5
Handle Length	- 5
Flat Filing	- 25
Handle Square	- 5
Bit Square	- 25
Surface Finish	- 5
Angles	- 20
Handle Centre	- 5
Handle Finish & Number	- 5
Total Marks	100

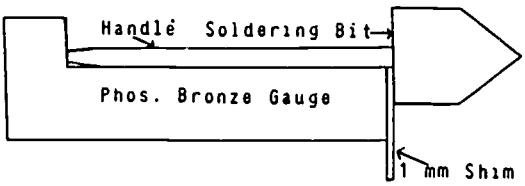
B. Criteria for Allocation of Marks

OVERALL BIT LENGTH

Using Vernier Calipers award 5 marks for length between 70 mm - 72 mm. Deduct 2 marks for each 1 mm over or under.

HANDLE LENGTH

Using Gauges (No. 1) award 5 marks up to 1 mm under or over.



FLAT FILING

Check on surface plate dependant on blued surface. 5 marks per side.

HANDLE SQUARE

Using Square. Visual check.

BIT SQUARE

1 Award 5 marks for each face by placing square across largest width and with distance marked off square into 5 equal lengths. Allow 1 mark for each square touching.

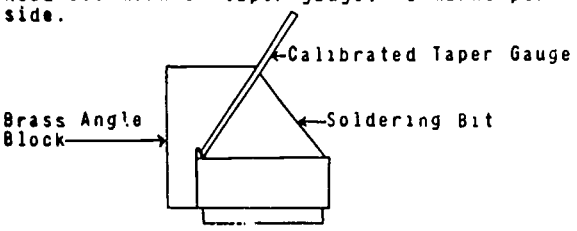
2 Check and square 90° apart 2½ marks each way.

SURFACE FINISH

Visual marking for general finish.

ANGLES

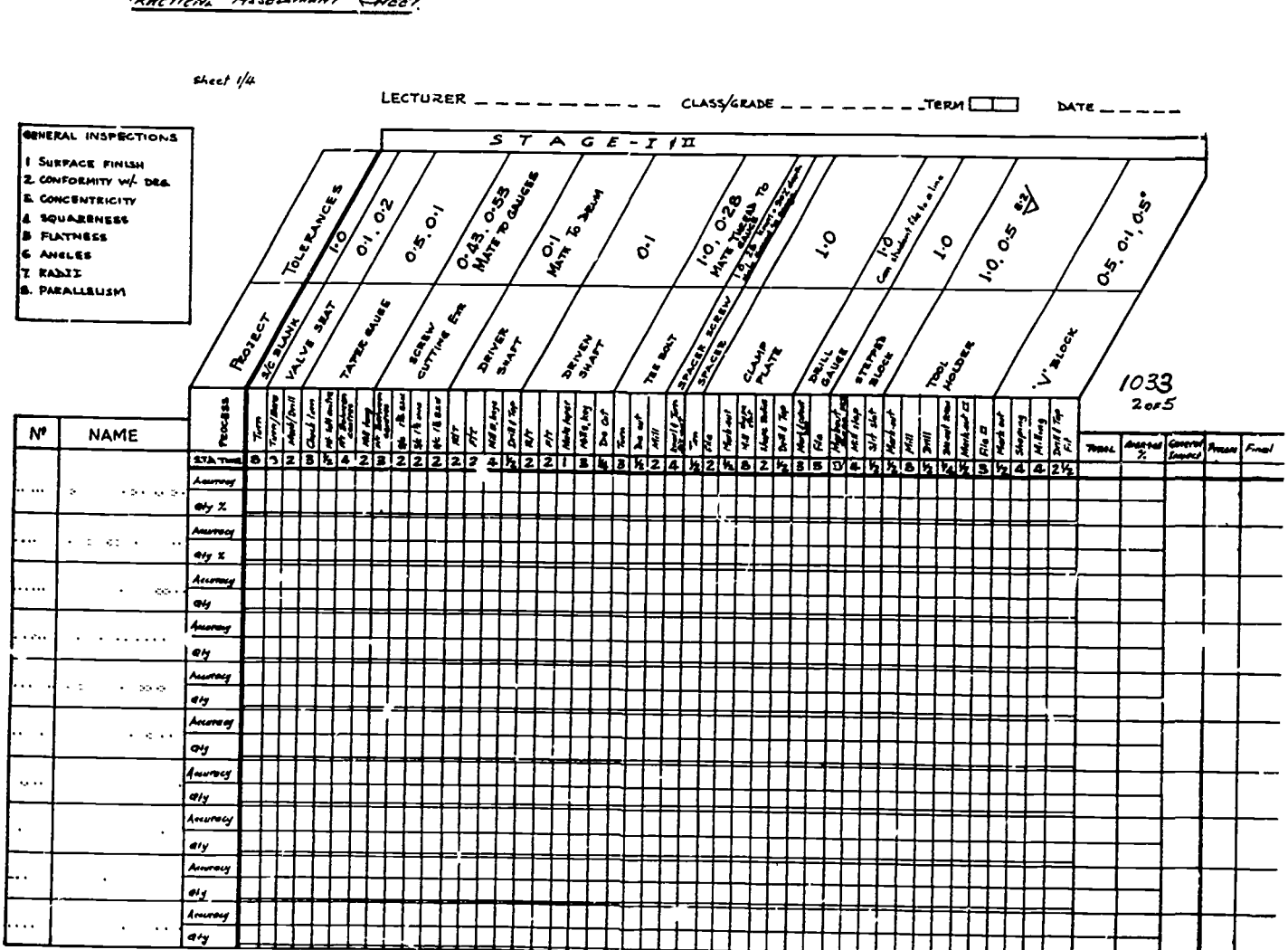
Using both No. 2 Gauges (Brass angle block and Calibrated taper gauge). Fit taper gauge between Solder Bit and Angle Block. Read off mark on taper gauge. 5 marks per side.



HANDLE CENTRE

Visual check using Gauge (No. 3).

Keeping a record of practical assessments can be a problem. A good example of a practical assessment sheet from a South Australian TAFE College follows:



E. Essay

i) Extended response

A long essay or assignment permits students to organise and present their own ideas. The structure of the answer is left (almost) entirely to them. A comparison of essay and multiple choice questions is shown below.

	MULTIPLE-CHOICE	ESSAY
Learning Outcomes Measured	Good for measuring knowledge, comprehension and application outcomes; generally inadequate for analysis, synthesis and evaluation outcomes.	Inefficient for knowledge outcomes; good for comprehension and application outcomes; best for analysis, synthesis and evaluation outcomes.
Sampling of content	The use of a large number of items results in broad coverage, which makes representative sampling of content feasible.	The use of a relatively small number of items results in limited coverage, which makes representative sampling of content difficult.
Preparation of Items	Preparation of good items is difficult and time-consuming.	Preparation of good items require time and thought, but easier than the preparation of objective items.
Scoring	Objective, simple, and more reliable.	Subjective, difficult, and less reliable.
Factors that Distort Student's Scores	Reading ability and guessing.	Writing ability and bluffing.
Probable Effect on Learning	Encourages students to memorise and understand the ideas of others.	Encourages students to organise, analyse, synthesise and express their own ideas.

Two examples of an essay question follow:

'Discuss the social impact of computer assisted manufacturing on the heavy metal industry'.

'Describe the advice you would give to someone who is thinking of setting up a small business'.

Sometimes, a choice of questions is offered in essay examinations. If this is done, test reliability will be low and statistical correction of marks is not possible, because in this case students are actually answering a number of different examination papers, not just one.

ii) **Restricted answer**

This is a short form of essay where students are expected to restrict their answering to a paragraph or two. For example:

'How is the pH of soil measured?'

Essay questions are notoriously difficult to mark and a later section of this chapter describes ways of increasing reliability. It is helpful to have a list of criteria for assessing assignments and one example of such a list, from Assessment guidelines for Colleges of TAFE, Queensland, is shown below.

A LIST OF CRITERIA FOR ASSESSING ASSIGNMENTS

(This is only a suggested list and will not be appropriate in all situations.)

CRITERIA	RATINGS*	COMMENTS
1. Answering the question(s) set or attacking the problem defined		
2. Statement of the problem		
3. Use of the literature (if needed)		
4. Understanding the theory		
5. Relating theory and practice		
6. Relevance/applicability of ideas		
7. Original thinking		
8. Style 8.1 Structure		
8.2 Development of argument		
8.3 Cohesiveness/unity		
8.4 Consistency		
8.5 Sustaining interest		
8.6 General literary style		
9. Technical		
9.1 Spelling, grammar, punctuation		
9.2 Referencing		
9.3 Bibliography		
9.4 Neatness/setting out		
10. Support materials		
11. Evidence of commitment to task		
12. Special criteria		
12.1		
12.2		
12.3:		
General/Additional Comments:		

*Ratings should be considered in relation to each criterion and cannot be summed. Weightings for criteria change according to the nature of the assessment. For some assignments, many of the criteria may not be appropriate at all.

F. Interview

Interviews are extremely unreliable as a method of assessment. The problem is that most people think that they are good interviewers and are capable of forming an excellent judgment about a student in a very short time. The fact is that interviewing is a highly skilled task which demands careful preparation, often making use of a check-list of requirements, and assessing the student's performance against previously established criteria.

Students should be told at course aims are to be assessed in an interview. The teacher's goal should not be to catch out students, but to find out how they perform.

An extension of the interview is role play. For example, the teacher might assume the role of a hotel guest and the student might be the receptionist. The student's performance as a receptionist would be assessed by the teacher. Sound recordings make useful records of interviews and can be replayed to assist in making the final assessment.

In the publication, Assessment guidelines for Colleges of TAFE, Queensland, six areas where interviewing can be useful are suggested:

i) in subjects which require oral and aural expertise to be examined, e.g. language;
ii) as a screening device where it is necessary to check personality compatibility with job requirements;
iii) as a means of feedback in the normal processes of teaching (both theory and practical);
iv) as a means of testing the knowledge and skills of students having learning disabilities related to reading, writing, and comprehension;
v) as a means of conducting supplementary examinations;
vi) as part of practical assessments.

14.3 VALIDITY AND RELIABILITY

Validity and reliability are two terms frequently used in the assessment literature. In order for assessment to carry out the educational functions for which it is intended, tests need to be reliable and valid. Both terms are explained below.

Reliability

Reliability can be thought of as the consistency or precision of a test; the extent to which test scores measure whatever they set out to measure consistently and precisely and are free from error or bias.

An example of a reliable measuring instrument would be a steel rule, because it yields measurements which are:

- relatively consistent from measurement to measurement and occasion to occasion;
- relatively precise or free from error.

A reliable test, like a steel rule, should yield results which are:

- relatively consistent irrespective of the time of test or the marker;
- relatively precise or free from error.

There are various statistical methods of estimating the reliability of a test. They generally involve test-retest procedures to estimate consistency over time with the same test or between equivalent forms of a test. There is also a method of estimating internal consistency within the one test. In all cases, reliability is expressed as a coefficient. A test with perfect reliability would have a coefficient of 1.0.

Using these methods, factors and procedures have been identified which can be shown to influence the degree of test reliability for a given test. Test reliability may be impaired and scores distorted by the following factors.

- Subjective or unreliable marking - marking which is subject to the bias or condition of the marker. The effects of this factor are most severe on essay tests, practical or performance tests, and projects and assignments.
- Poorly worded and ambiguous questions - questions which leave open a number of interpretations, cloud the real intent of the question or are too easy or too difficult. The effects of this factor can be severe on both essay and objective type questions.
- Chance factors - such as lucky guesses, lucky choice of topics or questions, condition of the student at the time of the test, and so on. These may distort scores on all types of test.

Procedures may be followed in test construction and in the treatment of test results that will generally improve test reliability.

- Improve marker reliability. This can be achieved through the use of good marking guides for essay questions, practical tests and assignments or by the use of objectively scored questions such as multiple-choice items. Essays should be marked for one aim at a time, and the students' names hidden from the marker, if possible. Shuffling of papers between the marking of questions will also help.
- Word questions carefully so as to:
  - remove ambiguities;
  - clarify the response(s) required;
  - eliminate questions which are too easy or too difficult.
- Reduce the impact of change factors by such means as:
  - longer more comprehensive tests;
  - cumulative or progressive testing.

In relation to the wording of questions, it has been found that regular analysis of student responses on objectively scored tests, using a procedure called item analysis, is very useful in detecting questions which:

a) are too easy;
b) are too difficult;
c) fail to discriminate consistently between high and low achievers.

Validity

Whereas reliability can be thought of as the extent to which a test measures consistently and with precision whatever it is measuring; validity should be thought of as the extent to which a test measures precisely and accurately what it sets out to measure.

Whereas reliability is concerned with the question: 'How well is the test measuring?' Validity is more concerned with the question: 'What is the test measuring?'

A standard and widely adopted classification system divides validity into four basic types: content validity; predictive validity; concurrent validity; construct validity. Only content validity will be discussed here. Standard texts on testing cover all types of validity in detail.

Content validity can be thought of as the extent to which a test measures a representative sample of course content. A test which has a high degree of content validity would measure the major or trivial ones and would measure them in a way which accurately reflected their importance or emphasis in the course curriculum. Content validity is concerned with the question: 'How adequately does the test content sample the total subject matter to be made up of items which form a balanced sample of the total subject matter and learning outcomes of the course or subject being assessed'.

Specification matrices can help to ensure good content validity. A specification matrix showing course aims and assessment techniques was described earlier in this chapter. Another matrix, showing course content and course aims can also be constructed. Both matrices, together with appropriate assessment questions, can help to ensure good content validity.

14.4 UNDERSTANDING ASSESSMENT STATISTICS

Computer programs are now readily available for calculating mean, standard deviation, correlation coefficient, frequency distribution, standard error, and for carrying out an item analysis. Therefore, this section will confine itself to the introduction of some of the more important terms, and a discussion on when it might be useful to use a computer program to calculate the result of whatever form of assessment is being used. Such knowledge will prevent mistakes like the following being made:

- Raw marks from different tests should never be added together. (To do this is equivalent to saying: 3 oranges + 2 bananas = 5 apples.)
- Normal distributions (i.e. a bell-shaped distribution) should never be imposed upon the class sizes generally enrolled in TAFE courses. The number of students is usually far too small for such a distribution.
- There is nothing magical about 50%, thus causing everyone below 50% to fail. A pass mark is purely arbitrary. Sometimes, 100% is the minimum requirement (e.g. when landing an aeroplane).
- 40% is not half as good as 80% obtained in a different examination.
- Multiple-choice items do not <u>have</u> to discriminate. A teacher's aim should be to ensure that all students pass!

Statistical techniques can be used for four main purposes:

- presenting and describing data
- drawing inferences from data
- making comparisons
- analysing multiple choice tests.

Presenting and describing data

A useful way to present assessment data is to draw a frequency distribution curve (for a very small number of students, a table showing frequency distribution of scores will be sufficient). Only when a student population is quite heterogeneous should a normal (bell-shaped) distribution be expected.

The mean (or average) mark should be calculated, and it is sometimes useful to define the range (the difference between the highest and lowest mark). A more useful indicator, however, is the standard deviation which will show how scores are spread out from the average mark. Standard deviation is a sort of average of all deviations from the mean.

If scores from different tests must be combined, then the test results must be made equivalent. This can be done statistically by using the standard deviation (for large numbers of students).

Drawing inferences from data

Many questions can be set to assess how successfully a student has achieved a course aim. It can be useful to know how much an individual score could vary by pure chance just in the selection of questions used in an examination. The standard error of test score in an objective test can be estimated from the following table:

Number of Questions	Standard Error
24	2
24-27	3
48-49	3
90-109	5
110-129	6
130-150	7

This means that for a test with 100 items, the students getting marks of between 45% to 55% must be considered equivalent.

Making comparisons

Correlation coefficients are used to make comparisons between students' performances on two different tests, or on the same test (if test reliability is required). A simple approach to obtaining the correlation coefficient (actually the tetrachoric coefficient) is to use the following table. To use the table, calculate the percentage of students in the groups who are in the top half of both tests which you wish to correlate, then read off the coefficient (r).

%	r	%	r	%	r	%	r	%	r
45	.95	37	.69	29	.25	21	-.25	13	-.69
44	.93	36	.65	28	.19	20	-.31	12	-.73
43	.91	35	.60	27	.13	19	-.37	11	-.77
42	.88	34	.55	26	.07	18	-.43	10	-.81
41	.88	33	.49	25	.00	17	-.49	9	-.85
40	.81	32	.43	24	-.07	16	-.55	8	-.88
39	.77	31	.37	23	-.13	15	-.60	7	-.91
38	.73	30	.31	22	-.19	14	-.65	6	-.93

Computer programs are readily available to calculate correlation coefficients more accurately, or to calculate different coefficients.

An analysis of responses to a question in a multiple-choice item will reveal the usefulness of distracters.

A good distracter should be chosen by not less than about one-sixth of the students and should appeal more to the bottom quarter of students than those in the top quarter of the test.

Response	a	b*	c	d
Upper 25%	0	10	1	1
Lower 25%	0	4	6	3

*b is the correct response

The simple analysis shown above indicates that distracter (a) is useless, but that (c) and (d) are functioning well.

Item difficulty is calculated by using the formula:

$$\text{Difficulty index} = \frac{\text{No. of stuoents giving wrong answer X 100\%}}{\text{Total no. of students}}$$

If a spread of results is required, a difficulty index of between 20% - 80% is usually sought.

Guessing

The question of guessing in multiple-choice tests frequently arises. In general it is best not to apply a statistical guessing correction in a multiple-choice test of at least 50 items.

If a pass mark of 50% is used, the table shows the percentage of students who could pass due to chance on a four choice test.

No. of Items	% of chance passes
10	21
20	12
50	3-5
100	0-5
200	0-1

14.5 NORM AND CRITERION-REFERENCED TESTS

In norm-referenced assessment, the performance of a student is compared with the performance of the other students completing the test. In criterion-referenced (or mastery) assessment, the performance of a student is compared with a specific standard (not with other tudents).

In norm-referenced testing, attempts are made to produce a wide spread of scores. This is not essential to criterion-referenced testing. The TAFE National Centre's handbook provides a table of comparisons between the two approaches to assessment (pp. 206-7).

14.6 ADMINISTRATION OF ASSESSMENT

In some colleges, assessment will be administered centrally and so the teachers' task will be to follow set instructions. Marking schemes must be followed, and deadlines for submitting results must be kept.

Where assessment is a college responsibility, the outline procedures which follow will give you some guidance.

	NORM-REFERENCED	CRITERION-REFERENCED
USES	To provide a means of comparing the performance of individuals on a set of defined tasks. As a selection device to select between individuals competing for scarce resources (e.g. places in an engineering school).	To determine the peformance of individuals in relation to specified criteria (objectives). As a 'hurdle' to decide whether an individual has gained enough knowledge and/or skills (i.e. achieved sufficient mastery) to proceed to the next level of instruction.
CONTENT	Content can be defined by general objectives. Test content does not necessarily match particular classroom objectives closely. Relationship between test items and classroom goals may be indirect. Test items are normally a representative sample from a larger pool, the assumption being that performance on the sample is an accurate indication of performance on the whole pool.	Content must be defined by specific (behavioural) objectives. Furthermore, in many TAFE subjects, performance criteria and conditions under which performance must be accomplished also need to be specified. Test content must match classroom objectives closely. Relationship between test items and classroom goals must be direct. All stated objectives need to be tested by items; sampling of objectives is not appropriate.
QUESTION TYPE	Items which discriminate between individuals are desirable as there is usually a requirement to compare the performance of different students.	Items must match the objectives; items which discriminate between more able and less able students are not sought. Items are required to provide information about what a student can or cannot do.

	NORM-REFERENCED	CRITERION-REFERENCED
SCORES	Variability in scores obtained by the group of students taking test is desirable. Scores provide information on relative standing of student in group and give indication of what student can do. High scores can reflect excellence of performance.	Variability in scores is irrelevant. Scores reflect accurately what students can or cannot do. Identifying excellent performance is often not appropriate. However, as with norm-referenced tests, it is usually possible to identify performance well above the specified standard or criteria.
GRADES AND CRITERIA FOR SUCCESS	Variability of scores enables allocation of grades. Scores (in some tests) can be related to performance of larger group of students giving normative data, as in a standardised test. *e.g. 'He came top of the class'* *'His score puts him in the 90th percentile of the population'* Different criteria for success are possible. *e.g. 50% may be classified as a pass but students may be required to score 75% if they are to proceed to next level of study.* (N.B. such criteria are arbitrary)	Grades, except pass/fail, may not be appropriate. Scores usually expressed in such a way as to reflect performance against criterion *e.g. 'She can type 40 words per minute without making more than 2 errors per page'.* Criteria for success are often matters for judgment. In many TAFE subjects such judgments are usually related to occupational performance data. In the above example more than 2 errors per page might be defined as failure to achieve the criteria.
RELIABILITY AND VALIDITY	A well-developed set of psychometric techniques is available for deciding on the reliability and validity of the norm-referenced test.	Test theorists are still in the process of developing generally accepted statistical procedures for determining the reliability and validity of the criterion-referenced tests. Some of the procedures currently in use involve complex mathematical formulae.

[After Boehm (1973)]

Criterion-referenced assessment

It will be recalled that when this approach to testing is employed, test scores are interpreted or measured against a set standard or criterion. Grades, which are usually pass or fail, reflect achievement or non-achievement of the criterion. This form of testing is usually associated with mastery tests which are used to measure absolute achievement or mastery of a narrow range of objectives.

These tests usually consist of item, tasks or sets of items designed to measure specified objectives, and results in the test are organised and interpreted in relation to the mastery of these objectives.

Consequently, the procedure for converting scores to grades is a simple one as follows:

- determine a performance standard or acceptable level of mastery for each individual objective, task or sub-test and for the total test or assessment programme;
- determine marks or raw scores achieved on each objective, task or sub-test and for the total test or programme;
- allocate the grade PASS for each score which attains or surpasses the prescribed level for mastery and FAIL for scores which do not. (Grades of pass may also be used if discrimination within the pass category is required.) This will usually involve allocating pass or fail grades for each objective, task or sub-test as well as for the total test or test programme.

Norm-referenced assessment

It will be recalled that when norm-referenced assessment is employed, test scores are interpreted, not in relation to a set standard or criterion, but in relation to standards within the group or groups of students tested. This approach to testing is usually associated with general achievement tests which are used to measure general or relative achievement over a broad range or sample of course objectives (rather than for each specific objective). Students are ranked or compared in their achievement of these objectives by the use of grades such as A B C D E, and so on, or distinction, credit, pass, fail.

A simple method for the allocation of these grades using raw or untreated scores will now be described.

- Determine raw scores for each student on each component of the assessment programme—according to procedures set down in the marking guides.
- Combine scores from each component into a total or combined score for the assessment programme—in the module, unit or subject.
  This can be done only if each of the component scores is expressed on a similar quantitative scale (e.g. mark out of 100) and the distribution on these component variables are roughly comparable. Otherwise, statistical procedures must be employed in order to continue the scores.
  Scores from particular components may be given increased weightings.
- Rank the total scores from high to low and make a frequency distribution showing the number of students achieving each score. The score itself does not determine the grade—it is the standing of that score in relation to the other scores.
- Allocate grades according to some previously determined distribution or method.
  Grades are allocated for each score according to the position of that score in the distribution. For example, the top 10% might be given As, the next 10% or 20% might be gien Bs and so on. Some aspects of an absolute scale, such as a score of 60% to pass, might also be employed.

Sometimes, assessment results obtained by students at one college have to be combined with assessment results obtained by students at a different college. If identical examinations and marking schedules are employed and norm-based assessment is used, then there is no problem attached to this. However, if criterion-based assessment is used, marks obtained in one college as compared with another may need to be moderated. Moderation procedures involve meetings of accessors, agreement on assessment criteria, exchange of samples of work between institutions, and (occasionally) the setting of a standardised moderating test. Procedures will vary from State to State and the details are beyond the scope of this book.

14.7 SUMMARY

This chapter has described the procedures to be followed in the planning of a valid and reliable assessment programme. The procedures stressed were:

- determine the purpose of the tests to be used;
- identify the subject matter and learning outcomes to be assessed on a table of specifications;
- determine appropriate forms of assessment and assessment strategies for the subject matter and outcomes being assessed;
- outline the assessment programme showing components and mark allocations worked out in order to accurately reflect the importance of the topics and outcomes being assessed.

If these procedures are to lead to the desired result (that is, an assessment programme which is reliable and has high content validity) the forms of assessment to be used must be constructed properly and in such a way as to actually carry out the function which is planned for them. That is, they must actually test what they are intended to test.

This brings us to the next major procedure in the development of an assessment programme: the construction of the actual tests and test items. The principle to be followed here is that, to ensure content validity, the tests and test items must be constructed in such a way as to actually bring out and assess the behaviours which they are constructed to assess.

Measures must be taken also, during the construction and scoring of the tests, to improve test reliability.

Assessment is an essential component of the teaching process. As one teacher has said: 'The first task when devising a course should be to write the assessments, because that will show what the course is <u>really</u> all about'.

REFERENCE

Boehm, A. E. Criterion-referenced assessment for the teacher. <u>Teachers College Record</u>, 1973, <u>75</u>(1), 117-126.

Thomson, P. (1986). <u>Handbook for TAFE teachers: student assessment</u>. Melbourne: Nelson Wadsworth.

CHAPTER FIFTEEN: SOLVING CONCERNS OF TEACHERS AND STUDENTS (G. WOODBURNE)

15. PURPOSE OF THIS CHAPTER

Previous chapters have given you an introduction to teaching in the TAFE classroom, workshop or laboratory. We now wish to turn your attention to some personal and environmental problems that can affect students and teachers and so interfere with successful learning and teaching.

The chapter is divided as follows:

15.1 PERSONAL PROBLEMS OF ADULT STUDENTS

A common mistake of instructors teaching adults for the first time is to assume that because of the more mature age of their students they have no personal problems that will affect their learning and their desire to complete any course they undertake.

This impression is often reinforced by the students themselves who can appear confident and relaxed, can be quite articulate in the classroom and even, if asked, will assure the teacher that they have no problems. It is only when their attendance becomes irregular and eventually they drop out that the teacher realises that something must have been wrong for some time.

Faced with shrinking classes, new teachers can lose confidence because they assume that the sole cause of this problem is poor teaching.

Why students leave a course

Christchurch Polytechnic undertook in 1984 a major study of 'dropouts' at that institution.

The first part of the study established what variations there were in the attrition rate

- by the department offering the course
- by the time of the class (i.e. whether it was a daytime or evening class)
- by the length of the course.

Table 15.1 discloses that there were significant differences in the attrition rate by department. A more detailed analysis of this information revealed that the attrition rate within departments varied as widely as 0-70%.

TABLE 15.1 Summary of drop-out rate by department

Department	Total Enrolled	Total Discounted	Drop-out Rate %
AppSci	1109	357	32
ArtCo	1592	273	17
Build	184	43	23
Elect	161	66	41
FoFas	381	144	38
Lang	1720	572	33
Metal	388	98	25
Sec	1719	501	29
Overall	7254	2054	28

Table 15.2 discloses that every department had a higher attrition rate for evening classes than for day classes, though again these differences varied considerably among departments.

TABLE 15.2 Summary of drop-out rate according to time of class

Department	Drop-out rate (day) %	Drop-out rate (evening) %	Total %
AppSci	29	34	32
ArtCo	10	23	17
Build	15	24	23
Elect	30	41	41
FoFas	22	46	38
Lang	24	41	33
Metal	13	26	25
Sec	28	30	29
Overall	22	32	28

TABLE 15.3 Summary of drop-out rate according to length of course

Length of course	Drop-out rate %	Range (by department) %
1 - 6 weeks	12	10 - 16
7 - 11 weeks	20	17 - 39
12 - 14 weeks (1 term)	27	20 - 48
15 - 18 weeks (1/2 year)	36	38 - 56
26 - 28 weeks (2 terms)	21	5 - 25
34 - 38 weeks (full year)	42	19 - 65
Overall	28	10 - 65

Table 15.3 shows a strong relationship between the length of the course and the attrition rate, though again there were major differences in the rate according to department.

This last fact needs some qualification, however, as this and other research discloses that how the attendance time is scheduled (e.g. block release) has more effect on the drop-out rate than the total number of hours in a course. For example, evidence suggests that students are better able to cope with longer but fewer disruptions to their lives.

Summing up the information we have so far, we know that certain kinds of courses will attract high drop-out rates i.e., courses that are held in the evening and demand weekly attendance over a long period. While this information is important, it still does not tell us why some students don't finish courses.

Reasons for students dropping out

In order to tease out these reasons, the Christchurch Polytechnic research team surveyed a sample of 1196 students who had dropped out of courses at the college. The reasons disclosed by this survey fell into three broad groups:

- Reasons relating to the students' personal circumstances.
- Reasons relating to the teaching process.
- Reasons relating to the college as a whole.

The personal circumstances of students was shown to be the main reason (53%) for their failure to complete courses. Within this category changes in work or home commitments were the major triggers for withdrawal from a course. From this study and other research we know that these 'changes in commitments' include: pressures from a new job, changes in working hours, changes in the geographic location of a job, promotion, need to travel more frequently and, at home, the illness of a spouse, child, or parent; changing houses and marital discord, sometimes connected with the demands of the course.

In addition to these pressures, students can find that a course is inappropriate, less interesting or is more demanding than anticipated, or that it requires a better educational background or a higher level of skills than they possess.

For some students, courses can be too costly, while for others transport difficulties, including parking problems, can trigger their withdrawal.

While teachers cannot solve many of these problems, they can often assist students who are having difficulties by advising them of alternative programme schedules, of special classes for those with specific learning difficulties, of financial support available, and of the general advisory service provided by student counsellors. However, where the teacher has the most opportunity to help prevent drop-outs is in the teaching process.

The Christchurch survey revealed that 37% of students gave an aspect of the teaching process as a reason for their dropping out. A group of these reasons was related to the course itself: its content, quality, level, resources, assessment and quantity of work required outside the classroom.

A second group was related to the attitudes and performances of teachers: lack of interest in the students, superior attitudes to students, favouritism in the classroom, poor teaching skills, lack of organisation and general lack of effort.

The third group of reasons was related to the class and other students: class too big, range of student abilities too great and a lack of class cohesion.

Many of those reasons for dropping out lie within the control of teachers as the following quotes from students in the survey indicate:

> I think the tutor displayed a lack of understanding how to teach. He seemed to be lecturing to amuse himself rather than for the benefit of the class.

The tutor assumed we had a background we did not have and was not stated as a prerequisite for the course.

He also recommended a textbook that at that time was unprocurable.

He humiliated students on their ability, or lack of it.

Tutor tended to be dictatorial. Was arrogant, sexist and unprepared.

Tutor seemed disorganised, couldn't recall what he had done last time, often had 30-40 minutes left with nothing planned.

Spoke to class as if IQ average was about 65.

The atmosphere was awkward, and in every lesson the tutor seemed to be the only one talking.

With a good teacher, none of these problems would have arisen. The fact that they did should be a sobering reminder that adult students expect competence and concern from their teachers.

The survey revealed that 10% of students gave reasons relating to the college as the cause of their dropping out: lack of parking, shortages of equipment, cost of the course, class size, and the impersonal nature of a large institution.

Summing up, many students drop-out of classes for reasons that teachers can do nothing or little about; however, teachers' attitudes, skills and commitment are major factors in maintaining student commitment.

Most colleges have professional counsellors to assist students with problems. Teachers aware of this support, and who are alert to the signs of student problems, can often help with simple advice or referral to counselling.

15.2 PROBLEMS OF TEACHERS

Teachers also can have problems in the classroom. New teachers in particular should be alert to those potential problems that can make teaching a stressful and even unpleasant job.

The problems of new full-time teachers are examined in a major study carried out by Butterworth and Gonczi in 1984. The first point they make is that the initial two years of full-time TAFE teaching can be a period of great professional and personal stress.

Some of the personal problems facing new teachers and common to any new job include: having to move house, working different hours, establishing new work relationships, and accepting new work responsibilities. There are problems, however, that spring from the particular demands of TAFE teaching. The most important of these is the amount of time new teachers need to devote to teaching to make a success of it. Contrary to the general belief that teachers work for only thirty hours a week for the few weeks when they are not on holidays, the Butterworth and Gonczi study and other studies reveal that new teachers have to spend a considerable part of their 'free' time preparing lessons, marking, and studying and completing assignments for their initial teacher education programmes. The study further reveals that this effort can disrupt established family routines and thus lead to stress at home as the family attempts to adjust to new routines and demands.

This stress is often compounded by the more immediate stresses associated with teaching: re-learning material that has long been forgotten, learning new material and, very importantly, becoming a teacher rather than a 'doer'.

Some new teachers find the constraints of working to a fixed timetable very constricting, while others find the very act of standing up in front of a class quite unnerving.

On top of all of this, many teachers who have never worked in the public service find the rules and regulations difficult to cope with and find the decision-making processes of a bureaucracy cumbersome and slow; moreover, they find that, unlike most places at which they have worked, the equipment and facilities they need are not necessarily readily available to them.

Butterworth and Gonczi summed up the problems of the new teacher as follows:

Educational problems

1. A lack of time for the preparation of lessons and assignments for TAFE teacher education programmes.
2. A lack of resources for teaching.
3. Inadequate levels of support from senior staff in their TAFE teaching schools.
4. For those who were required to attend TAFE teacher education programmes:
   - irrelevant subjects in those programs;
   - an insufficient level of reading and written comprehension skills in relation to the requirements of an advanced education programme.

5. A lack of technical knowledge in some of the fields of study in which they were required to teach.
6. A lack of time management and information research skills.
7. Excessive travelling, especially in relation to lack of time.
8. A need to adjust to academic work.

Administrative problems

9. Excessive amounts of paperwork.
10. A lack of information on departmental procedures, policies and questions.

Personal problems

11. Stress and frustration.
12. Insufficient time for family relationships.
13. Inadequate level of salary.

Recruitment/induction/problems

14. No induction for many.
15. The necessity to teach without prior teaching experience.
16. Short notice before entry on duty.
17. Delays in the payment of salaries.
18. Inadequate inductions (when received), especially the induction into departmental procedures.
19. For exempt TAFE teachers, insufficient orientation to the department and the need (for some) to re-orient their teaching to adults (from teaching children).

In addition to these problems, beginning TAFE teachers in non-metropolitan TAFE colleges experienced difficulties associated with their isolation, a lack of resources (especially library materials both for the classes they teach and their TAFE Teacher Education Programmes) and the need to travel long distances.

The most widespread of the problems listed above were:

1. lack of time for lesson preparation and for assignments for TAFE teacher education programmes. This affected 54% of Dip.Ed. and 55% of Dip.T. Teachers-in-Training;

2. lack of support from head teachers. This was a problem for 70% of Dip.Ed. and 50% of Dip.T. beginning TAFE teachers. All other problems listed affected between 20% and 50% of all beginning TAFE teachers.

Associated with their role of (supporting) beginning TAFE teachers, head teachers indicated that they lacked the training and time to support new teachers.

It is important to note, however, that despite all of these problems, most beginning TAFE teachers were reasonably happy with their jobs; 76% indicated that they would still accept the job knowing what they now know about its difficulties, while only 9% said they would not accept the job.

One beginning TAFE teacher, commenting on these findings, said that (in his experience) the first year was the hardest. This was because he had to build up resource materials (which included developing a filing system). Also, he felt it was important 'to keep on top of the work, or the work will pull you under'.

Part-time TAFE teachers suffer from many of the problems of full-time teachers but there are problems peculiar to part-time teaching, e.g., establishing regular communications with the teacher in charge of the section, gaining access to syllabuses and past exam papers, grasping how their course fits into the total syllabus, finding a desk at which to sit to do some paperwork, and establishing contact with non-teaching staff who service the course.

Clearly the initial responsibility for minimising these problems of new full-time and part-time teachers lies with TAFE and where applicable the teacher education authorities. Having said that, however, it is clear that new teachers will have to cope with many of these problems with little assistance from the authorities.

The first step new teachers should take is to establish close contact with experienced teachers and with other new teachers. Experienced teachers can be a great source of advice and help and other new teachers can also provide moral and practical support.

The second step for new teachers is to learn to manage the little time they have available. New teachers must plan their days, their weeks and their year if they are to meet the deadlines imposed by keeping up with the syllabus, marking assignments and coping with their teacher education requirements. The teaching year or semester follows a cycle to which teachers must conform otherwise they will find their classes becoming disorganised and their students increasingly bewildered and restless. Their home life also will be affected adversely if they are constantly having to alter family arrangements because of postponed teaching commitments.

The third step a new teacher should take is to begin a systematic collection of materials for classroom use. Materials should be constantly revised and improved, and there is no point in repeating work simply because the original material is available.

The fourth step is to learn to live with the bureaucracy. It might be slow and cumbersome but it also has great strengths that will provide teachers with a network of support throughout their careers. It is pointless and counter-productive to complain constantly about filling in forms and completing returns. Most forms are essential and most returns are used to keep the system moving.

The fifth step is to accept the point that a successful career in teaching will be dependent on adopting the view that the future will be one of constant learning, innovation and striving for improvement. If teachers stand still they will go backwards: their knowledge will become outdated, their teaching skills will deteriorate and they will lose interest in their teaching.

15.3 SUMMARY

Adult students suffer from a variety of personal and educational problems that can interfere with their learning and in too many cases can lead to the abandonment of their courses. While a number of these problems cannot be solved by teachers, many can be solved by them provided they are sensitive and are prepared to call upon the support services provided by most colleges.

The major way, however, in which teachers can help students is by being conscientious, thorough and competent in their teaching. Good teaching, in the fullest sense, is the most important condition for maintaining student interest and guaranteeing learning.

Teachers, particularly new teachers, often find themselves under great personal and professional stress as they strive to cope with the variety of personal and work problems that can confront them. Teaching is both a difficult and demanding profession which you can master and enjoy only if you are committed, conscientious and systematic in your approach.

Managing your time, learning to live with the bureaucracy, establishing close professional relationships with your colleagues and, most importantly, continuing to be open to new ideas and striving always to improve your performance will help make a teaching career very rewarding and enjoyable for you.

REFERENCES

Butterworth, P., & Gonczi, A. (1984). Beginning TAFE teachers: profiles—attendance patterns. Sydney: NSW Department of TAFE and Sydney CAE.

PolyView. (1984). Why students leave a course: Factors in the attrition rate at Christchurch Polytechnic. Christchurch: Christchurch Polytechnic.

CHAPTER SIXTEEN: EVALUATING COURSES (W. HALL)

16. PURPOSE OF THIS CHAPTER

A good, practical definition of course evaluation is: seeking to obtain answers to questions that will enable decisions to be taken about courses. In this chapter, that definition is explained and ways of evaluating courses are described. Frequently, evaluation is not even thought about by teachers until after a course has been completely developed and taught. Only at the end of a course is an evaluation attempted, often in the form of a hastily and often badly produced questionnaire distributed as a sort of 'seal of respectability'. In this chapter evaluation is presented as an essential component of every part of the curriculum process. The chapter is divided as follows:

Evaluation is fashionable. Indeed, without it a course is regarded as incomplete. Evaluation validates curriculum development and full-time evaluators are now being employed in education. It may come as a surprise to realise that the evaluation industry is fairly recent and only in the past twenty years have people been employed (in any number) as evaluators. Of course, we have been 'evaluating' our teaching all of our lives, but the paraphernalia of evaluation, and evaluation as a discrete field of study with its own research journals, are recent developments and are largely products of national, centralised science curriculum development in the United States and, to a lesser extent, the United Kingdom.

The purpose of this chapter is to suggest a usable definition of evaluation, to place evaluation in an educational context, to describe some approaches to evaluation and their accompanying tools, all of which are drawn from first-hand, practical experience.

16.1 MEANING OF COURSE EVALUATION

As mentioned at the start of this chapter, a good, practical definition of course evaluation is:

> seeking to obtain answers to questions that will enable decisions to be taken about courses.

This definition makes the following assumptions:

a) meaningful **questions** can be asked about courses;
b) **techniques** are available to provide information that will enable useful answers to these questions to be given;
c) the right **people** are available to administer the techniques and there are other people who are willing to have the techniques applied to them;
d) **decision-making** is an essential part of course construction and development.

Each of these assumptions is now discussed.

a) Meaningful questions

The first stage in any evaluation is to ask: What questions will the evaluation attempt to answer? (Even an evaluation which is trying to 'find out what's going on' is attempting to answer a question.) An example will help to illustrate the kinds of questions which can be investigated. This example is taken from Hall (1977).

In the example, a new approach to assessment has been introduced into a course and attempts are being made to find out how this will affect students and staff.

STUDENTS	What workload is demanded by the new assessment scheme? What, and when, are other assessments completed during the year? Do students think that the assessment reflects the nature of the course?
STAFF	What workload is demanded by the new assessment scheme? Do staff think that the assessment reflects the nature of the course?
ASSESSMENT	What is the specification matrix for the assessment scheme? (What aims are being assessed? and What are the component weightings?) How do the aims and the weightings on the matrix compare with how the course is taught?

b) **Techniques**

Having agreed on the questions, the next stage is to find appropriate evaluation techniques to provide information in order to answer the questions. Dates for applying the techniques must also be agreed upon. (These, and other, techniques are described in Section 16.3.)

Variable	Questions to answer	Proposed evaluation technique	Suggested date
Student	1. What workload is demanded by the assessment?	Diary	At intervals throughout the year.
	2. What, and when, are other assessments completed during the year?	Information from other departments	When convenient
	3. Does the assessment reflect the nature of the course?	Questionnaire	Mid-term 3
Staff	1. What workload is demanded by the assessment?	Questionnaire	Immediately after assessment
	2. Does the assessment reflect the nature of the course?	Interview	Term 3
Assessment	1. What is the specification matrix?	Departmental discussion	Term 1
	2. How does the matrix compare with how course is being taught?	Departmental discussion	Mid-term 3

A total evaluation plan is now being developed. What is obvious from this is that evaluation should not be a casual, last minute activity consisting of a hastily thrown together questionnaire. Evaluation must be planned and executed just like any other piece of research.

c) Administering the techniques

Who should do the evaluations? is an important question. Section 16.2 explains why evaluation is an intensely political activity. Also, the person or persons making the decisions after an evaluation need to be taken into account because that might have some bearing on how the evaluation is carried out and how the results are presented.

The design of many early evaluations was based on the assumption that the evaluator could be an impartial, objective outsider. That such an opinion could have persisted for so long is surprising, as the naive model shown in Figure 16.1 which reflects this attitude, ignores even basic knowledge of social science investigations.

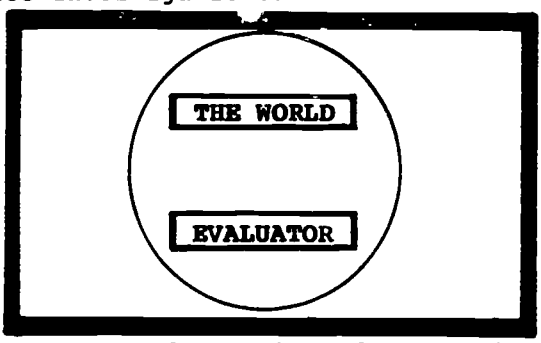


Figure 16.1 A false view of evaluation

Consider a simple example. Suppose the evaluation question you want to answer is: What do students think about my teaching? A common technique to try to answer this question is to distribute a student questionnaire (like that shown later in this chapter), to ask students to complete the questionnaire after a lesson, and then to collect the questionnaire for later analysis.

If you do the collecting, students will be suspicious and may not answer honestly. To overcome this problem, leave an empty cardboard box at the door for the completed questionnaires and leave the room.

Similarly, if students are expected to write anything on the questionnaire (especially their names!) then they will be afraid of being identified. The solution is for them to be given a multiple-choice (or other objective) questionnaire.

It was mentioned above that large scale 'professional' evaluation grew out of early science curriculum development projects. The developmental model used by these projects was linear with evaluation placed at the end of the curriculum process, as shown in Figure 16.2.

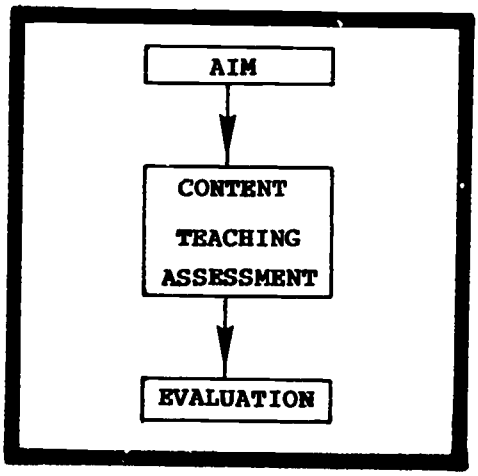


Figure 16.2 A linear development

We now realise that this is not a useful approach to curriculum development and that evaluation should occur throughout the curriculum process, which is not a linear process. The curriculum model described in Chapter 2 overcomes this deficiency.

Decisions concerning a course which arise from evaluation should not wait until a course is completed, as evaluation can provide valuable information which can be used to amend a course, thus improving it as it progresses.

16.2 THE 'POLITICS' OF EVALUATION

Although evaluation is concerned about making changes, it involves people, and often it is people themselves who will need to change. The 'political' aspects of evaluation are shown in Figure 16.3.

For an evaluation to succeed, it has to penetrate a 'shell' of resistance, and overcome prejudices. Some of these prejudices, so far as teachers are concerned, are listed. You should not become neurotic about all of this! Nevertheless, you should be aware of the political problems you are likely to face should you decide to evaluate any part of the course you are teaching.

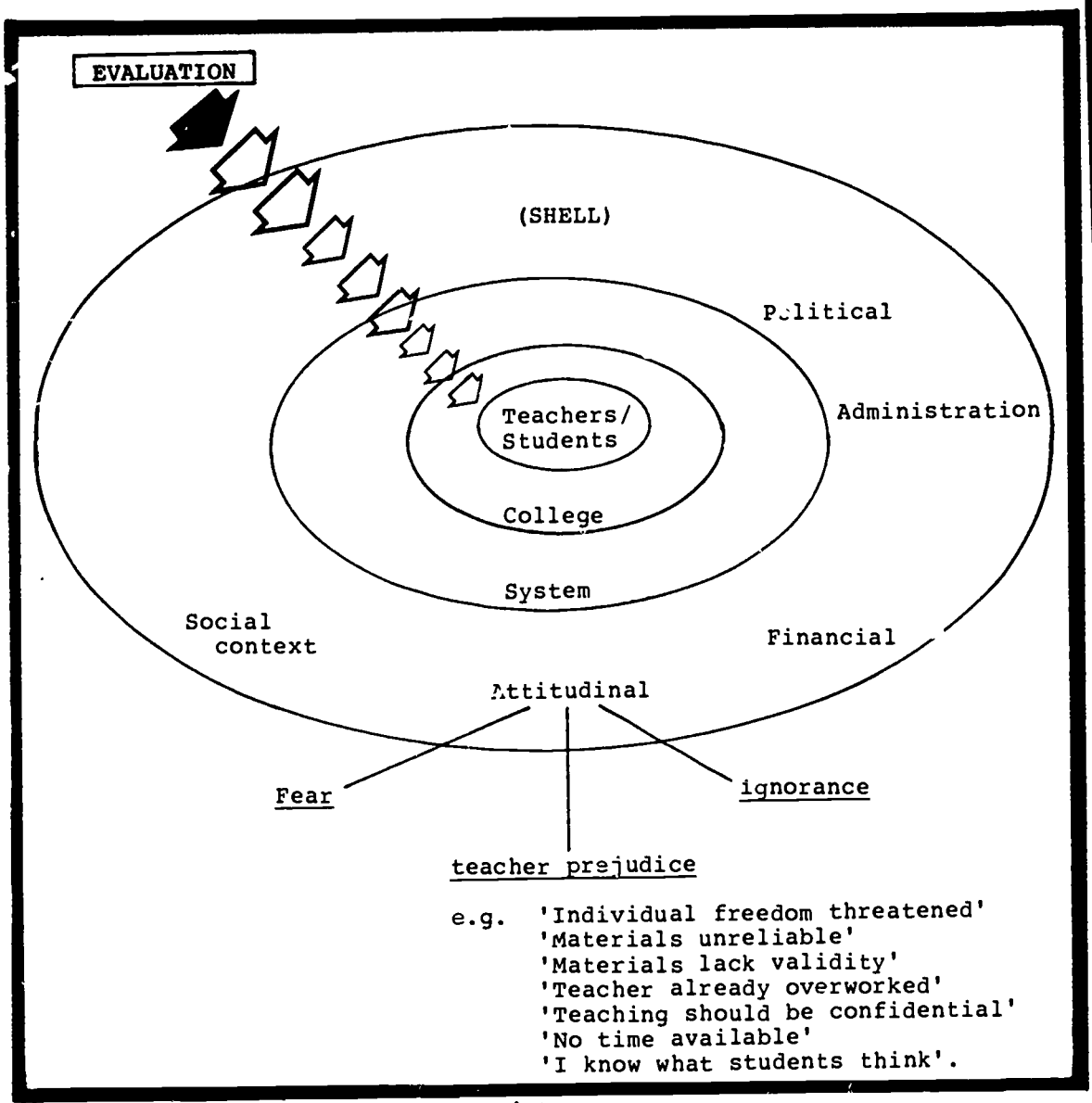


Figure 16.3 The shell of resistance

16.3 APPROACHES TO EVALUATION

There are many approaches to evaluation. An early approach was based upon methods used in agricultural research. In this approach, an experimental group was compared with a control group. A statistical analysis of the data attempted to discover whether there was any significant difference between the two groups as a result of the educational experiment. Such an approach is now very rarely used because in curriculum development there are so very many variables which cannot be controlled or which are impossible to isolate, that meaningful statistical comparisons between groups are quite impossible.

A later approach to curriculum evaluation was based upon:

input ⟶ process ⟶ output.

This approach is now rarely used because it is known that education is much more complex than this and, in any case, the approach is far too limited in scope. This is because the approach focuses on measuring the achievement of behavioural objectives, which is only one area of interest to the evaluator.

A more recent approach draws upon the work of social anthropologists. Here the evaluator is a participant observer, recording what is taking place. One danger in this approach is that it may result in a highly subjective evaluation. More recently, there has been emphasis on a case study approach to evaluation.

What this adds up to is that there are many ways in which evaluation may be carried out. The definition of evaluation presented at the beginning of this chapter permits the use of **any** appropriate approach, using any useful technique for answering the question(s) which are considered to be important. In summary, it is what is known as an 'eclectic' approach to evaluation.

One of the clearest summaries of the different approaches to evaluation is that by Lawton (1980). He discusses six models:

1. the classical (or agricultural-botanical) research model;
2. the research and development (or industrial, factory) model;
3. the illuminative (or anthropological, responsive) model;
4. the briefing decision-makers (or political) model;
5. the teacher as reseacher (or professional) model;
6. the case study (or eclectic, portrayal) model.

In this chapter, an eclectic approach is being proposed, where any useful evaluation technique is used at the most appropriate time in order to provide information which will help teachers to answer a question.

In this chapter, the term 'evaluation' has been used rather than the terms 'assessment' or 'measurement'. Although the three terms can be connected, they are often used as though they are interchangeable, which is incorrect. Evaluation has already been defined. The other two terms are defined below.

Assessment

In assessment we are seeking to find out how successfully students have achieved course aims (or objectives). Formal assessment often includes examinations. The results of assessment can often be of use to the evaluator.

Measurement

In measurement, a property of what is being 'measured', using units of measurement, is being quantitatively determined. Evaluators frequently do not measure, they make rough estimates.

Evaluation, assessment and measurement are connected, as illustrated in Figure 16.4:

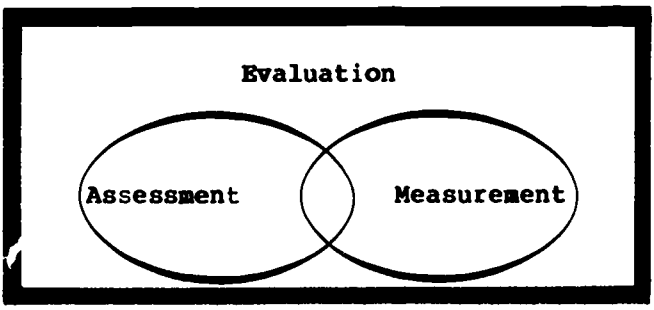


Figure 16.4 The connection between evaluation, assessment and measurement

16.4 TECHNIQUES FOR EVALUATING COURSES

In this section, six common techniques will be described:

a) written submission
b) questionnaire
c) interviews (including group discussion)
d) checklist
e) observation (including keeping a diary)
f) assessment results.

If possible, more than one technique should be used and information should be obtained from more than one source. For example, to evaluate a lecture, both a questionnaire and the results from both sources should be compared.

For each of these techniques one, or all, of three groups (or individuals) could be involved:

- the teacher
- the teacher's peers
- students.

For example, the teacher can undertake self-evaluation by completing a checklist, or analysing a sound or video-recording. Similar evaluations on teaching performance can be undertaken by students and the teacher's own colleagues.

Many specialist books are available on evaluation techniques, including the results of a major project completed by the TAFE National Centre for Research and Development with the South Australian Department of TAFE (Byrne, Houston, & Thomson, 1984).

a) **Written submission**

Either individually, or as a group, students will often be prepared to produce written submissions about a course. Completely open-ended submissions can be useful if a teacher wants to find out those things that are most immediately on students' minds. However, such submissions are of little value if there are particular aspects of a course about which the teacher would not welcome comment. A combination of guided and open-ended approaches is probably the most useful. An example of an open-ended questionnaire follows (Figure 16.5).

SAMPLE QUESTIONNAIRE

Please will you answer the questions in the spaces provided? The comments will help to improve teaching in the college. Your remarks will remain confidertial. Typewritten or printed responses will ensure anonymity.

1. Please list the three most favourable aspects of the course.

. . . . . .

. . . . . .

. . . . . .

2. Please list the three least favourable aspects of the course.

. . . . . .

. . . . . .

. . . . . .

3. Please comment on the usefulness of the workshop activities.

. . . . . .

. . . . . .

. . . . . .

4. Please write anything you feel could help your teacher to improve the course.

. . . . . .

. . . . . .

. . . . . .

Thank you for answering the questions. Please return them via the departmental mail box within one week.

Figure 16.5 Open-ended questionnaire

b) Questionnaire

Questionnaires range from the completely open-ended (as in the above example) to the wholly objective, which, however, are objective only in the manner in which the answers are elicited, (i.e. wholly subjective decisions had to be taken about the questions to be asked.)

Questionnaire design is as much an art as a technology. There are pitfalls to avoid, and the texts by Moser and Kalton (1971) and Oppenheim (1966) will help you to avoid making mistakes. Hall (1977) lists the decisions that have to be taken at an early stage and the major errors to avoid.

The decisions which have to be taken at an early stage of a survey include:

a) How the data will be collected.
b) How the population will be approached.
c) The main areas to be tackled in the survey and the order of presenting these areas.
d) The sequencing of questions within each main area.
e) The form of the questionnaire (i.e. free responses or coded; and if coded, the type(s) of coding).

The major errors to avoid when writing the questionnaire are listed below. They are taken from Hall (1977).

i) ensure that the population will, in fact, be able to answer the questions. For example, questions dealing with courses attended six months previously are unlikely to be answered with high accuracy;

ii) ensure that questions can be answered honestly. For example, an honest answer will not always be given if a student who is asked to express an opinion about a lecturer is also expected to write his name on the questionnaire;

iii) make the questions as specific as possible;

iv) make the questions as simple as possible. It is not the task of the questionnaire designer to try to impress people by his use of long words; it is his job to ensure that the population can understand every question;

v) ask a number of shorter questions rather than one complex question. Complex questions are often attempting to ask for more than one piece of information;

vi) do not use words or questions which are open to a variety of interpretations;

vii) do not ask hypothetical questions;

viii) do not phrase the question so that the person answering it is forced to think in one particular direction only. This is often done when the questioner gives an example after the question; the person answering then has difficulty in thinking beyond that one example;

ix) do not embarrass the person answering the questionnaire;

x) only ask questions for which the answers are needed. Do not waste everybody's time by asking a question 'because it might be useful'.

When you have written the draft questionnaire, always ask a colleague to comment on it. If possible, you should also try out the questionnaire on a small sample. Avoidable confusion can easily occur; for example, consider the question:

Did you find the talk and discussion worthwhile? YES/NO

There are four errors in this simple question! They are:

a) it is a double question;
b) there is no definition of 'worthwhile';
c) no instructions for answering are given;
d) a simple Yes/No answer is unlikely to be possible.

A common questionnaire is that produced for students to answer about a teacher's effectiveness. An example of such a questionnaire is given below (Figure 16.6). It is taken from the Evaluation of TAFE institutions handbook (1984) published by the TAFE National Centre.

c) Interviews

Interviews as one method of assessment have already been discussed in Chapter 14. If interviews to evaluate a course are conducted by the same person who assesses the course, students are unlikely to be frank.

A good approach to interviewing for evaluation is to hold a discussion, structured as a seminar, with a small group of three to five students, sitting informally in a circle with the interviewer as a member of the group. A bad approach is to stand in front of a class and demand comments from them.

d) Checklist

In a checklist, the important variables to be evaluated are listed and the evaluator works down the list, as the following example to evaluate teaching practices shows (Figure 16.7). It is taken from the TAFE National Centre handbook (Byrne, Houston, & Thomson, 1984).

e) Observation

An independent evaluator can sometimes find it useful just to observe and record what is going on. A simple diary describing what is occurring can then be used to write an evaluation report. In this approach, the evaluator must remember than his or her presence can affect what is occurring.

TEACHING METHODS

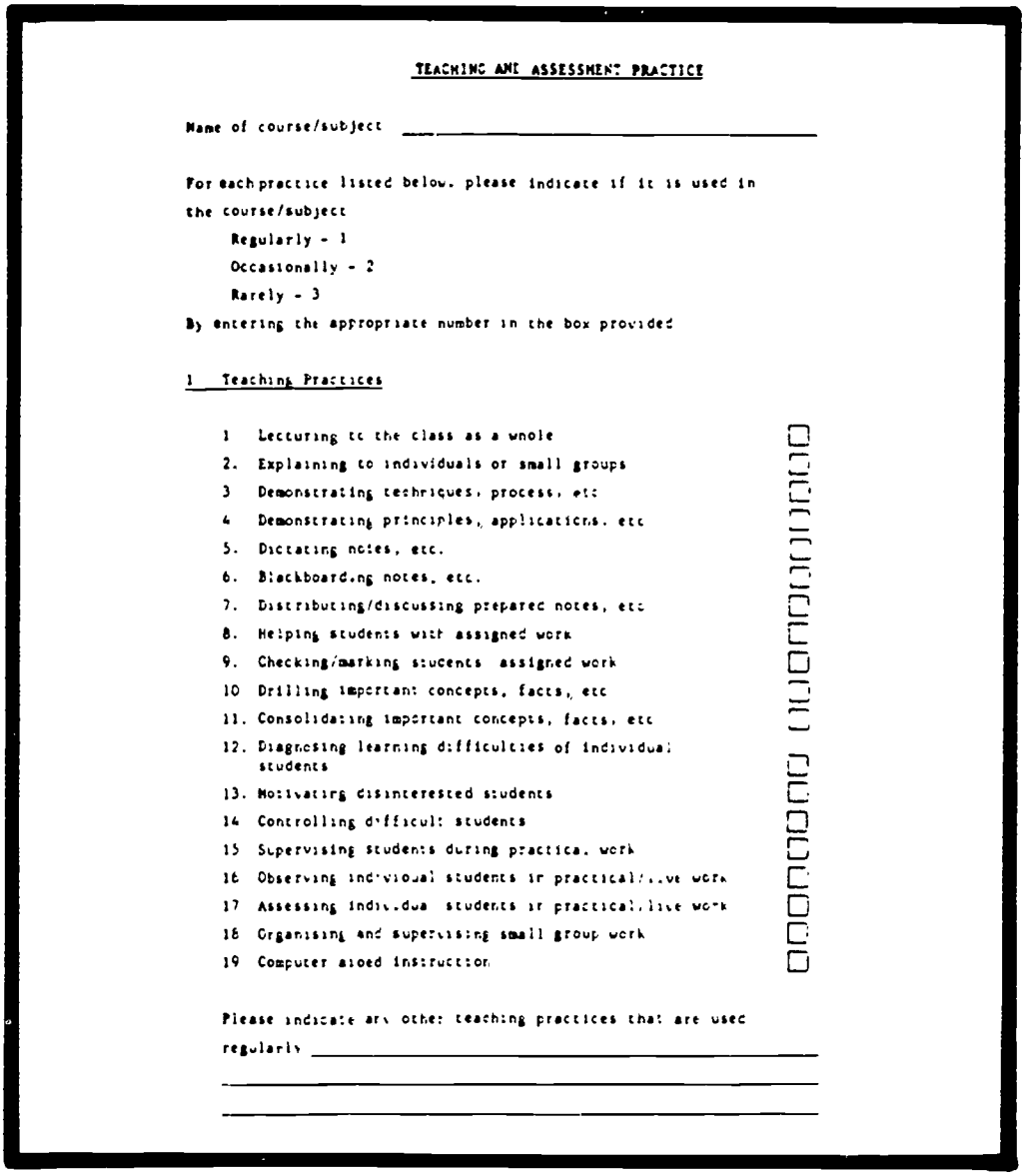
The following list of teaching methods, techniques and behaviours is related to my teaching.

To help me improve my teaching and therefore help you learn more effectively, you are asked to respond to each item on the list.

When you would like me to change a method or technique please try to indicate in what way you think this should happen.

ABILITY TO:	IS SUITABLE	WOULD PREFER A DIFFERENT APPROACH	SUGGESTED CHANGE
a. write clearly on blackboard	☐	☐	.....
b. speak clearly	☐	☐	.....
c. present lessons in an understandable sequence	☐	☐	.....
d. make objectives of a lesson clear	☐	☐	.....
e. make overall objectives of the subject clear	☐	☐	.....
f. be on time for classes	☐	☐	.....
g. set about the right amount of home assignments	☐	☐	.....
h. allow students enough time to prepare for tests, exams etc.	☐	☐	.....
i. allow students enough time to carry out practical assignments	☐	☐	.....
j. ensure books and journals recommended for reference are readily available	☐	☐	.....
k. set tests and exams that are challenging but fair	☐	☐	.....
l. mark results of tests and exams fairly	☐	☐	.....
m. return marked tests and exams without undue delay	☐	☐	.....
n. indicate clearly where mistakes have been made in any work done for assessment	☐	☐	.....
o. allow sufficient class time for students to ask questions	☐	☐	.....
p. reply to questions from students with clear and unambiguous answers	☐	☐	.....
q. make lessons interesting and stimulating	☐	☐	.....
r. make lessons entertaining	☐	☐	.....
s. motivate students to work harder.	☐	☐	.....

Figure 16.6 Teaching methods questionnaire



TEACHING AND ASSESSMENT PRACTICE

Name of course/subject _____

For each practice listed below, please indicate if it is used in the course/subject

Regularly - 1
Occasionally - 2
Rarely - 3

By entering the appropriate number in the box provided

1 Teaching Practices

1 Lecturing to the class as a whole
2. Explaining to individuals or small groups
3 Demonstrating techniques, process, etc
4 Demonstrating principles, applications, etc
5. Dictating notes, etc.
6. Blackboarding notes, etc.
7. Distributing/discussing prepared notes, etc
8. Helping students with assigned work
9. Checking/marking students assigned work
10 Drilling important concepts, facts, etc
11. Consolidating important concepts, facts, etc
12. Diagnosing learning difficulties of individual students
13. Motivating disinterested students
14 Controlling difficult students
15 Supervising students during practical work
16 Observing individual students in practical/live work
17 Assessing individual students in practical/live work
18 Organising and supervising small group work
19 Computer aided instruction

Please indicate any other teaching practices that are used regularly _____

_____

_____

Figure 16.7 Checklist

f) Assessment results

The results of assessment (see Chapter 14) can give useful evaluative information. One method of presenting results for this purpose is shown in Table 16.1, taken from the TAFE National Centre's Handbook.

TABLE 16.1 Using assessment results for evaluation

COURSE/SUBJECT RESULTS

COURSE/SUBJECT TITLE	YEAR	WITHDRAWN				FAIL	PASS	TOTAL	NO. EMPLOYED/ PLACED	COMMENTS
		BEFORE ATTENDING	< .2 of course	.2 - .5 of Course	.6 - .9 of Course					

16.5 SELF EVALUATION

You can evaluate your own performance as a teacher both informally and formally. Class reaction should be carefully gauged throughout a lesson. A small cassette recorder can sometimes be usefully employed to record a lesson for later analysis.

The Royal Australian Navy (1982) has produced a self-evaluation sheet for its instructors and the sheet is reproduced below. TAFE staff development units will be able to offer help in developing evaluation techniques and they sometimes run courses on evaluation for teaching staff.

INSTRUCTOR'S SELF EVALUATION SHEET

(The purpose of the Self Evaluation Sheet is to let you know how well you are performing as an Instructor. No one else will necessarily see your score. Be truthful to yourself. Do not overmark. Identify those areas where you need to improve. Use this card about every three months to check on your performance.)

Read each question carefully. Then consider all the good practices required by an Instructor if he is to achieve the maximum score. After this, estimate as well as you can how closely you are following practices and score yourself accordingly. If you always follow the practice score 2, mostly follow the practice score 1, rarely or never 0. Add up your score. How did you do?

90 or above outstanding. 70-79 average.
80-89 above average. 69 or less, below average.

If your score is below 70, you will know that there is a definite need for you to improve. You should change many of your teaching habits. Consult the QC staff for advice.

COMPLETE IN PENCIL

	Your Mark
1. a. Do I arrange the classroom seating so all trainees can see all aspects of instruction?	
b. Do I control the classroom temperature as much as I can?	
c. Do I ensure trainees have adequate lighting?	
d. Do I have all equipment required on hand?	
2. Do I introduce myself at the first lesson?	
3. Can I address each trainee by name?	
4. a. Do I obtain essential information on each trainee from record cards?	
b. Do I consult DOs and Divisional Senior Sailors as necessary?	
5. Do I start my class on time?	
6. a. Is my uniform always clean and ironed?	
b. Do I display good bearing?	
7. a. Do I talk to everyone, including trainees in the back row?	

		Your Mark
	b. Do I avoid personal mannerisms, particularly distracting ones?	
	c. Do I judge my effectiveness, by observing trainee reactions?	
	d. Do I avoid talking to the chalkboard, or OHP screen and have good eye contact with trainees?	
8.	a. Do I make my points clear by using easily understood words?	
	b. Do I explain unfamiliar terms and write them on the chalkboard?	
	c. Do I refrain from the profane or use of abuse?	
	d. Do I avoid being sarcastic to trainees?	
9.	a. Do I have a lesson plan for each lesson?	
	b. Does it prompt me to arrive for instruction with the aids required?	
	c. Does my lesson plan help me to present instruction in the right sequence?	
	d. Does it keep me to the allowed time for instruction?	
	e. Does it prompt me to ask key questions?	
10.	On practical equipment and in the workshops do I limit my talking to the minimum, so that the trainees can get to work?	
11.	a. Do I avoid aimless repetition?	
	b. Do I avoid distractions?	
12.	Do I keep trainees at work until the end of the period?	
13.	a. Do I "Get on" with my class?	
	b. Do I encourage trainee questions?	
	c. Do trainees respect my authority?	

			Your Mark
14.	a.	Do I use training aids at appropriate times?	
	b.	Do I improvise training aids when necessary?	
	c.	Do I make a careful study of the aid before use?	
15.	a.	Do I gain my trainees' full attention?	
	b.	Do I motivate trainees by describing the relevance of the instruction?	
	c.	Do I tell trainees the objective?	
	d.	Do I revise skills and/or knowledge required for the lesson?	
	e.	Do I present information in the best sequence?	
	f.	Do I present simple examples before more complex examples?	
	g.	Do I make learning easier by given cues or memory aids?	
	h.	Do I ask questions of trainees during instruction?	
	i.	Do I ensure trainees achieve the performance described in the objective?	
	j.	Do I allow time for trainees to practice skills?	
	k.	Is feedback given to each trainee after a question or a performance?	
	l.	Do I test performance on each objective?	
	m.	Do I have follow-up practice of important skills to reduce forgetting?	
16.	a.	Do I adjust my instruction to allow for differences in ability and experience?	
	b.	Do I give extra attention to the trainee who is struggling?	

16.6 SUMMARY

Evaluation needs to be planned, just like every other part of the teaching process. Although evaluation is now a full-time profession for many educationalists, it is still possible (and highly desirable) that you, as a teacher, should evaluate what you are doing.

Unless you plan your evaluation, and choose an appropriate technique, the chances are that the year will pass without your obtaining any useful feedback on your performance as a teacher; and that is not desirable.

All components of the teaching process should be evaluated, not just how well you lecture (which is the part of teaching usually chosen for evaluation purposes).

REFERENCES

Byrne, M. J., Houston, D. J., & Thomson, P. (1984). The evaluation of TAFE institutions handbook. Adelaide: TAFE National Centre for Research and Development.

Hall, W. C. (1977). Evaluating courses. Adelaide: University of Adelaide (ACUE).

Lawton, D. (1980). The politics of curriculum evaluation. In Politics of the school curriculum. London: Routledge and Kegan Paul.

Moser, C. A., & Kalton, G. (1971). Survey methods in social investigations. London: Heinemann.

Oppenheim, A. N. (1966). Questionnaire design and attitude measurement. London: Heinemann.

Royal Australian Navy. (1982). Training system manual, vol.4 - the conduct of training. Melbourne: Royal Australian Navy.

CHAPTER SEVENTEEN: LEARNING AND TEACHING (M. TENNANT)

17. PURPOSE OF THIS CHAPTER

The purpose of this chapter is to outline the various approaches and strategies to learning which are important to your professional development as a teacher. It aims to give you a framework in which you can locate and control your continuing learning.

Continuing learning is one key to professional and personal development, and life and work satisfaction. This does not mean that you are confined to enrolling in courses designed to update professional skills, or to develop personal interests. You may wish to do this, but it is only one of myriad ways in which learning can occur.

Indeed, Tough (1979) has shown that, for every one hundred deliberate attempts to learn something, only twenty are planned by professionals and about eighty by the learner. This highlights the fact that learning is a personal and natural process and that no one can learn for someone else. Some people are efficient learners, they make the most of their experiences and they use a variety of resources for learning. Others are less adept at learning, they don't pursue learning in an intentional and systematic way and they rarely reflect on their experiences. Knowing how to learn efficiently and productively is thus an important personal and professional skill. Smith (1984, p. 16), lists some of the skills of the adult who has 'learned how to learn'; such a person, Smith claims, knows the following:

- How to take control of his or her own learning.
- How to develop a personal learning plan.
- How to diagnose strengths and weaknesses as a learner.
- How to overcome personal blocks to learning.
- How to formulate learning objectives.
- The conditions under which adults learn best.
- How to learn from life and everyday experience.
- How to negotiate the educational bureaucracy.
- How to learn from television, radio, computers, etc.
- How to lead and participate in discussion and problem-solving groups.
- How to get the most from a conference or workshop.
- How to learn from a monitor.

- How to make use of intuition.
- How to help others learn more effectively.

The chapter is divided as follows:

17.1 SOME GENERAL APPROACHES TO LEARNING WHILE TEACHING

Morris (1983) provides a framework for understanding the different ways in which teachers can pursue their learning. Each of these is outlined below.

Personal approaches

The personal approach goes beyond the development of narrow occupational skills. It focuses on you, the teacher, as a total person and implies that you should plan your learning according to your wider interests and needs. The assumption here is that personal psychological growth enhances the quality of your teaching. Tough (1983, p. 147) has outlined some of the personal changes that people strive for, they include:

- self-understanding
- the ability to express genuine feelings and interests
- close, authentic relationships with others
- better performance on the job; ability to reshape the job or its meaning;
- a body free from excessive tenseness and wasted energy;
- reshape relationship with mate; new mate or partner (or an alternative living arrangement); new circle of friends;
- adequate self-esteem;
- reduction of psychological and emotional problems and blocks that inhibit full human functioning;
- improved awareness and consciousness; more open-minded and inquiring; seeking an accurate picture of reality;
- zest for life; joy; happiness;
- liberation, maturity, positive mental health; higher level of psychological functioning;
- less selfish and more altruistic; a greater effort to contribute to the lives of others;
- acceptance and love of self and others; accept the world as it is.

Job-embedded approaches

In the job-embedded approach learning occurs within normal teaching responsibilities. It can mean treating the classroom as your learning laboratory. This requires a keen sense of observation and the ability to purposefully reflect on the experience of teaching. It can also mean making use of meetings and discussions with your colleagues. This is an 'on the job' approach to learning which can both improve your teaching practice and extend your professional knowledge. Some of the skills and strategies in this approach are outlined later in this chapter.

School or college focused approaches

Another approach is one in which the needs of the school or college are assessed and used as a basis for identifying the required skills and knowledge of teachers. For example, if you were appointed to a college which had a number of distance programmes, then you would need to improve your skills in writing distance learning materials and in developing resource packages. In this approach your learning begins with the question: What skills and knowledge do I need to serve the interests of the institution which employs me?

General professional approaches

The general professional approach to continuing learning commences with the question: What are the skills, attitudes, knowledge and values of an experienced professional TAFE teacher? Professional development and learning is broader than learning which is focused exclusively on the day-to-day job, the school, or the college. There is a recognition here that professions are dependent on a knowledge base—and that professional development means keeping up with advances in knowledge. For you, the TAFE teacher, this means keeping abreast of developments in both education, teaching and learning, and in the subject area in which you teach.

Each of the above approaches represents a different focus for your continuing learning. Such a framework is useful because it allows you to take stock of your learning and adjust any obvious imbalance.

17.2 STRATEGIES FOR CONTINUING LEARNING

Self-directed study

One technique for self-directed study, the learning contract, was outlined in Chapter 10. The most widely known advocate of self-directed learning, Malcolm Knowles (1973), claims that it depends on the presence of the following abilities:

1. to develop and be in touch with curiosities.
2. to formulate questions, based on one's curiosities, that are answerable through inquiry (in contrast to questions that are answerable by authority or faith) . . .
3. to identify the data required to answer the various kinds of questions.
4. to locate the most relevant and reliable sources of the required data . . .
5. to select and use the most efficient means for collecting the required data from the appropriate sources.
6. to organize, analyze, and evaluate the data so as to get valid answers to questions.
7. to generalize, apply, and communicate the answers to the questions raised. (Knowles, 1973, p. 163)

The above list can be categorised into three broad abilities: to plan goals and purposes, to identify learning resources and strategies, and to evaluate the learning outcome. Thus a deliberate and systematic approach to self learning will entail exploring questions such as:

> What do I want to learn? Why do I want to learn it? How competent do I need to become? How will I know if I have achieved my goals? What changes will occur? What do I need to do to achieve the goals? Who/what can help?

A typical learning project can usually be stated in the following form Figure 17.1.

Goals-purposes

To set an agenda and conduct a staff meeting according to accepted committee practices.

Learning resources

1. Head of school who has conducted meetings.
2. Fellow teacher who is president of a local community committee.
3. Former working partner, who is completing a Bachelor of Business degree.
4. Library.
5. Meetings—as an observer.

Strategies

1. Locate and read at least two books on committee procedures.
2. Attend at least two committee meetings and take notes and prepare questions.
3. Arrange an interview/discussion with the head of school, a fellow teacher and a former working partner. Ask them a range of prepared questions, and invite them to offer any advice or assistance.

Evidence of accomplishment

Set an agenda and conduct a meeting to the satisfaction of:

1. An experienced practitioner.
2. At least three participants in the meeting.

Figure 17.1 Learning project: Conducting formal staff meetings

The teacher as a researcher (observation and reflection)

You can approach each class and each lesson with a spirit of enquiry and an eagerness to learn from the experience. What works well, what doesn't? Why did that disruption occur? Do the students work well together? When are they inattentive? Should the furniture be organised differently? What was the effect of using that diagram? It pays to experiment and observe, to monitor your class and to change your practice accordingly. In its most simple form, 'research' implies at least three things: deciding what to observe and documenting your observations; reflecting on your observations and making sense of them; deciding on a course of action.

1. What to observe

It is best to remain open and to observe as many things as possible. However, it is useful to have a framework for observing your class. Most of what occurs in the classroom can be grouped under:

- classroom organisation (physical space, equipment, accepted procedures, etc).
- student—student interaction (dominant students, problem groups, competitive groups, dislikes, etc).
- teacher—student interaction (teacher's questions, explanations, illustrations, teaching aids, etc).
- anecdotal observations (observing specific events of interest).

One way to improve your observation skills is to observe another teacher in action—and then apply your observational technique to your own teaching. You can use as a guide for your self-observation the following example of an observation schedule containing typical questions that are asked by teaching supervisors Figure 17.2.

Classroom atmosphere	Do the students feel comfortable? Is the teacher comfortable? Do the students like the teacher? Does the teacher like the students? Are there dominant students? Are there potential conflicts in the group?
Teaching manner	Voice—pitch, pause, pace, clarity of expression, variety. Mannerisms—any repeated gestures, movement around the room, facial expressions, use of gesticulation.
Explanation/demonstration	Is it logical, clear, well thought out? Are the examples appropriate? Is the material at the right level of difficulty? Does the teacher seek feedback on understanding?

Questioning	Do students question the teacher? Does the teacher ask many questions? What types of questions are used and for what purpose? (e.g. probing, redirecting, re-phrasing, testing, rhetorical questions)
Use of aids	Chalkboard, OHTs, charts, films, models, etc. How are they used?
Teaching method	Is the method used appropriate to the students/content and other constraints? What other methods could be used to achieve the same end? (E.g. lecture, demonstration, class exercises, role playing, excursion, seminar, etc.)
Introduction	How is the lesson introduced? Are aims stated? Does the teacher provide an overview of the lesson? Does the teacher review the previous lesson? Does the teacher state the importance of the topic? How is interest aroused and sustained?
Classroom organisation	The timing of administrative announcements. Is there an established pattern of activities? Is the furniture arranged in the best way? Is the environment conducive to learning?
Preparation/class notes	Is there evidence of thorough planning and preparation? How are class notes used?

Figure 17.2 Teaching observation - typical questions

2. Reflecting on observation

Boud et al. (1985, p. 26) outline three elements important in reflection:

- returning to the experience, i.e. 'the recollection of the salient events, the replaying of the initial experience in the mind of the learner'

- attending to feelings, i.e. 'utilising positive feelings and removing obstructing feelings'
- re-evaluating experience, i.e. 're-evaluation involves re-examining experience in the light of the learner's intent, associating new knowledge with that which is already possessed, and integrating this new knowledge into the learner's conceptual framework'.

For example, you may have experienced open student hostility to a class activity, leading to conflict between you and a group of students. If you adopted Boud's approach, you could begin by going over the experience, perhaps writing down the details and sequence of events. You could then explore your feelings about the incident—when you felt frustrated or angry or hurt and how you feel about the people concerned and about your own reactions. It is also important to focus on the (positive) learning aspects of the experience—you can then re-evaluate it, linking it with other incidents, with what other teachers have said, with what you have read about conflict, and so on. In this way, what is potentially a very forgettable experience can be used as a springboard for professional development.

3. Deciding on a course of action

The purpose of reflection is to improve your teaching practice. An important skill in teaching is to build up a repertoire of strategies for dealing with different classroom situations. Most likely, the result of your reflection will be to add to this repertoire another practical strategy that will be put to the test when the occasion demands.

Collaborative learning

If you are faced with an instructional problem, where can you seek help? Perhaps by attending a staff development course, or seeking advice from a curriculum or instructional specialist, the college principal, or another supervisory staff member? Or should you first seek advice and assistance from a colleague and peer? Unfortunately the potential in using and working with colleagues is rarely fully utilised in teaching. Perhaps one reason for this is the private nature of teaching—your classroom, your notes, your ideas are often seen as personal property and are shielded from the public scrutiny of your colleagues. Nevertheless it is a good idea to encourage meetings with other teachers and to make the most of them. Smith (1984, p. 111) outlines the characteristics of a skilled collaborative learner:

Communication

- Listens actively
- Helps others understand what is said
- Keeps remarks related to the task at hand.

Climate

- Helps to arrange for appropriate physical environment
- Demonstrates support of others
- Expresses feelings in constructive ways
- Lets people be themselves.

Openness

- Reveals what he or she wants to learn
- Tries out new ideas and ways of doing things
- Requests personal feedback.

Other behaviour

- Shares in programme development and evaluation
- Volunteers for special tasks or roles
- Taps the knowledge and experience present in the group and outside resources used
- Shares the responsibility when things go less than well
- Diagnoses learning processes and seeks opportunities to improve process skills.

Formal courses

Universities and colleges of advanced education provide a range of courses which enable teachers to upgrade their initial professional qualifications. For example, many teachers with a diploma can use their initial qualification as advanced standing towards a Bachelor of Education degree. Those teachers who are graduates have a host of specialised and general graduate diplomas and Master's courses from which to choose. Formal courses require a commitment of time and energy and so it pays to develop efficient study and learning skills. John Gurr (1983) has developed a concise questionnaire which will help to identify strengths and weaknesses in your study and learning skills. This checklist and others like it, are recommended as useful tools for improving your ability to cope with the demands of higher education.

17.3 SUMMARY

This chapter commenced with the view that good teachers continue to learn and improve their professional competence.

Learning while teaching was seen as a process which focuses on one of four things:

- the person
- the job
- the college or school
- the profession.

In planning and mapping your learning, a balance between these different approaches is desirable.

In addition, you have a range of options for pursuing learning, among the most important are:

- self directed study
- observation and reflection (research)
- collaborative learning
- formal courses.

There are different skills associated with different strategies of learning and some of these skills were sketched. Ultimately, only the teachers who can manage their own learning are able to understand and manage the learning of others. Moreover, it is the lifelong learner who is best able to reap the rewards of a career in teaching.

REFERENCES

Boud, D., Keogh, R., & Walker, D. (1985). Reflection: Turning experience into learning. London: Kogan Page.

Clanchy, J. (1981). Essay writing for students. Melbourne: Longman Cheshire.

Eisemberg, A. (1978). Understanding communication in business and the professions. NY: Macmillan.

De Vito, J. (1982). Communicology. NY: Harper & Row.

Gurr, J. (1983). Study skills for TAFE teachers. Sydney: Sydney College of Advanced Education.

Knowles, M. (1973). The adult learner. A neglected species. Houston: Gulf Publishing.

Marshall, L. (1981). A guide to learning independently. Melbourne: Longman Cheshire.

Morris, R. (1983). Recent developments in in-service teacher education, Forum of Education, 23-30.

Persing, B. (1981). Business communication dynamics. Columbus: Merrill.

South Australian Department of Further Education. (1977). How to study effectively.

Smith, R. (1984). Learning how to learn. Milton Keynes: Open University Press.

Tough, A. (1979). The adult's learning projects. Toronto: OISE.

Tough, A. (1983). Self-planned learning and major personal change. In M. Tight (ed.), Adult learning and education (pp. 141-52). London: Croom Helm.

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