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Practical Training Techniques

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Chpt. 3

What we need to know about counter-f



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Chapter 3

What We Need to Know about Content

The complexity of the learner is matched by the complexity of the content the trainer and the learner both deal with. Broadly speaking, trainers are responsible for the learning of skills, for developing understanding and thinking, for modifying behavior and for changing attitudes, and sometimes for working on all of these things together. Each is taught most effectively through specific strategies and techniques. Strategies, techniques and trainer behavior all depend to some extent on the kind of material the trainer has to deal with (see also chapter 5).

The Material

Writing the material for a training session is something that becomes second nature to trainers. Learning to research and write quickly on a range of topics are skills acquired largely through experience. There are also many ideas in theory, and much more that is common sense, that can be used to make it easier for the new, or comparatively inexperienced trainer to generate training content. When it is considered that the ratio of preparation time, including practicing as well as generating the material, to delivery time can be 4:1 or more, then anything that offers some guidance is useful, to say the least.

As always, we can begin by looking at things from the point of view of the learner. A group of learners facing a trainer at the beginning of a training session will have certain expectations, and it is up to the trainer to

identify those expectations and meet them as far as possible.

What the Learners Want

Learners will have a number of things running through their minds at the start of the event. The more constructive thoughts, and the things the trainer can anticipate, will be about knowing where the session will lead, and what will be delivered; about understanding; about clarity; about seeing a logical development of ideas; perhaps—hopefully—about being entertained; and other things besides. The training content is only one of the elements in this, but it is where everything starts.

Setting Objectives

Starting the trawl for material is pointless unless the trainer knows where it is all going to end. The statement of objectives comes long before anything else is done.

The trainer setting out on the preparation of a session is only concerned with the objectives of that particular event. Over and above this there will be more general objectives drawn from the organizational environment, and from specific training management exercises such as training needs analyses, skills audits, and staff development and appraisal schemes. There will also be objectives covering a complete program or series of events. These may well give a general steer to the process, but the first step in creating the content is to set specific objectives for the session.

The literature reflects a standard approach. Irrespective of the nature of the learning—physical skills training, skills calling for understanding or thinking, behavior change, or indeed attitude change—the end results will all in the end be made up of behaviors. Describing these behaviors is the main component of a training objective:

- The objective should describe the behavior the learners should be able to perform, display, or demonstrate at the end of the training.

The next element to be added is the standard to which the behavior will be performed:

- It should include a statement of the standard the learner will achieve while performing the skill.

The final component will describe the circumstances in which this performance will take place, or the conditions under which the learning specified in the first part of the objectives will be used:

- It should state clearly the working conditions in which the skill will be carried out.

Case Study 3 Setting the Objectives for Skills Training

The Situation

For training to develop skills or impart knowledge, setting the objective is comparatively straightforward. A large boatyard was setting up a training session on winterizing outboard engines for junior staff.

At the end of each sailing season it is necessary to take certain preventive actions to ensure that an engine does not deteriorate while in winter storage. The instructor preparing the session therefore wrote down the behavior he would expect of the trainees at the end of the session:

- To prepare a marine outboard engine for winter storage.

To this he added the standard to which the activity would be performed.

- To ensure adequate protection from the weather while in winter storage.

Finally, he added a statement of the conditions under which the activity or activities would be performed:

- With the engine removed from the boat
- According to the manufacturer's schedule, and within a time allocation of 90 minutes per engine
- Using the standard tools supplied for the job: transom fittings spanner, plug wrench, standard screwdriver, cross-head screwdriver, spanners to fit the carburettor, fuel pump and starter, propeller, pliers, knife
- While complying with the safety regulations.

Comment

There are a number of key characteristics in this objective, and they should always be present when objectives are drawn up for any type of training session. The essential points about the way an objective is described are:

- It must accurately describe the skill, behavior, or attitude change the learners should be able to demonstrate at the end of the training.
- In the case of a skill, the objective should describe an action or actions.
- The action described can be observed by the trainer and others, whether it is in the form of a skill or cognitive development.
- The language used is important. Objectives should always be expressed by active verbs.

The other two elements—the conditions under which the action will take place, and the standard to which it will be performed—are also important. Together they tell the trainer what he or she has to aim for in the session, they show the learner what he or she can be expected to learn from the session, and they set the learner a target.

The key test for the trainer is the ability to visualise, from the objectives as they have been established, the task to be taught. It is also helpful if the learner can do this.

Training that is designed to engineer attitude change, explore more abstract ideas, or modify values, presents more of a problem for the trainer. The objectives cannot be observed during the training session, and it is more difficult to make a concrete statement about what is to be achieved, or to attach standards in the way it was possible for the session on outboard motor maintenance. This is usually dealt with by adding a requirement that trainees will “describe” or “list” certain features. In the case of the outboard maintenance schedule used above, an example would be to

- List the safety features to be checked during the winterizing process
- Identify the criteria to be used in deciding whether a component which has an effect on safety should be replaced.

Objectives can also be broken down into sub-objectives. These are known as *enabling* objectives, and they obviously help the student to achieve the *terminal* objective—the desired state at the end of the train-

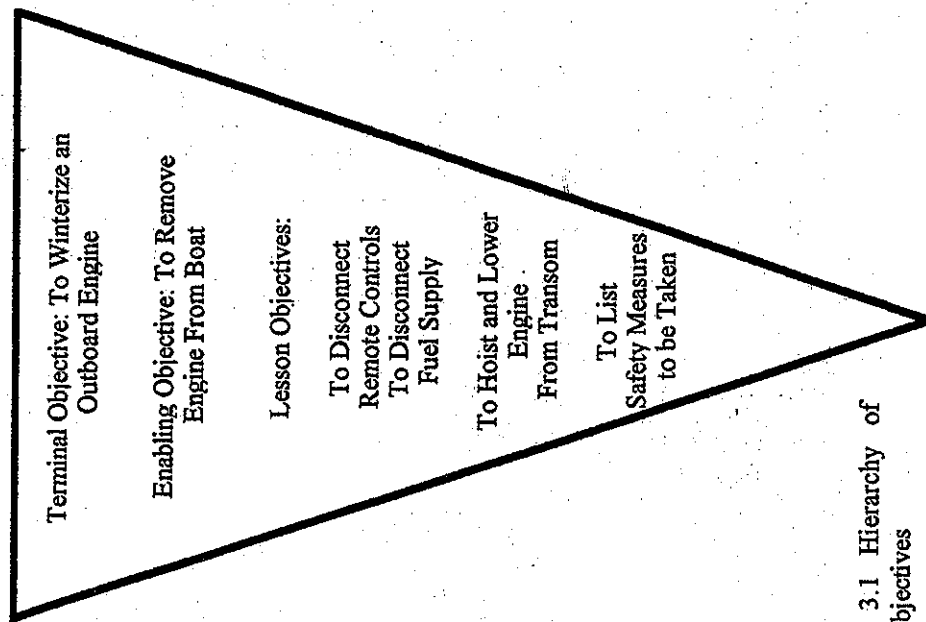


Figure 3.1 Hierarchy of Objectives

ing. Each part of the event can also have its own objective—the *lesson* objective.

Before we leave the question of objectives, there are one or two other points to note. The first thing is that these objectives should be written down as part of a session plan. It is very easy to work from what is stored in the memory, and skip this simple but essential component of planning. There are almost as many ways of expressing this as there are trainers. They can be scribbled down as part of the initial planning process, or they can be expressed in a logical and tidy way. Applying the objective of KISS (see chapter 2), simply describe the three elements of

- The learning task to be done
- The circumstances in which it will be accomplished
- The standard of performance that will be demonstrated

It is also possible to add a fourth element:

- The way in which the learning will be tested.

Performance	Conditions	Standard
To winterize an outboard engine	With the engine removed from the boat According to the manufacturer's schedule Within a time limit of 90 minutes Using the standard tools supplied	Sufficient to safeguard the engine from any damage while laid up over the winter

Figure 3.2 A Statement of Objectives

For the marine engine training session, this would give an objectives statement as described in figure 3.2.

Setting Objectives for Attitude Change

The performance statement embodied in the objectives for the outboard motor training was concerned with knowledge and skills. Where a change of attitude is required, objective-setting is less straightforward, because it is less easy to measure the resulting changes in performance. Using the example of service advisers in a garage, who might be expected to show a particular attitude to customers, it would be quite easy to describe this attitude as being courteous, cheerful, polite, and helpful. These behaviors will be easy to demonstrate, but no trainer will be able to tell whether or not the learners actually feel like this and have developed the desired attitude change. It could be realistically assumed that they would not feel like

this all the time, and maybe not even for some of the time. Peter Honey (2001) deals with this in the most practical way for trainers and advises concentration on the behavior change. The attitude change may or may not come later, but as long as the desired behaviors are being demonstrated then all is well. It is also worth repeating that many trainers reject the idea of writing objectives at all. The pros and cons of this argument are set out by Buckley and Caple (2000), and there is little doubt that it can be difficult to describe adequately the outcomes of a training session. The exercise can introduce an element of artificiality, or it can be a mechanical or meaningless activity. The whole business of setting objectives and then carrying them through can be restrictive as far as the trainer is concerned, and can appear to rule out more imaginative approaches to learning.

The way trainers feel about this partly depends on what seems to me, in the practical context of delivering a training session, to be a slightly artificial distinction between training, education, and learning. Again, Buckley and Caple (2000) develop this idea.

The only position a practical trainer can take is that most training delivery will obviously benefit from the judicious use of both traditional training techniques and modern learning theories. This adds weight to the view that the distinction between training, education, and learning can indeed be academic.

All forms of training need to be interesting as well as effective, and this demands a pragmatic view of what works and what does not work for an individual or a group. This could lead to training based on behaviorist ideas at one end of the spectrum, and on contemporary views about adult learning at the other, and all within a single event. Reece and Walker (2000) illustrate this point well, with an overview of how behaviorist, cognitivist, and humanist learning theories can be applied to all the main forms of learning. The value of setting objectives is practical, and it is not helpful to become mired in the difficulties of trying to specify less tangible outcomes.

It is sometimes said that an overconcentration on objectives is bad in any case because objectives are trainer-centered and not learner-centered. This is linked to the problem of putting too much emphasis on theory, referred to elsewhere in this book. The practical answer to this is that shifting the training session to a learner focus is a matter of trainer styles, and objectives should still be used to make the training more intelligible for the participants.

Action Points

- When setting objectives, concentrate on practical outcomes.
- There is a simple way of working out what the objectives should be, by asking three questions:
 - Where are we now?
 - Where do we want to end up?
 - What do we need to do to get there?

Domains: Looking for Help in Setting Objectives

Objectives are part of a performance statement describing the way trainees, or learners, will be expected to act, and the characteristics they will be expected to exhibit at the end of the training. This can be simply categorized as:

- Knowledge-based: demonstrating new knowledge
- Skills: demonstrating new skills
- Behavior: demonstrating new behavior, that might be evidence of attitude change.

These three areas of performance summarize substantial research into the classification of behaviors, known as domains. A basic understanding of these categories will help trainers analyze the nature of the performance they will expect from learners at the end of the training.

There are a number of taxonomies of learning (for example Bloom, 1964; Krathwohl, 1964) that categorize the different kinds of learning and the relevant methods. Most of these taxonomies agree on a division of learning into the three groups or domains of:

- The psychomotor domain, concerned with physical skills based on a combination of knowledge and practice. For the trainer, this has applications to the wide range of manual skills needed in organizations, and also for the coaching skills needed in areas like sports science and human movement. It involves physical coordination, the ability to follow a sequence of movements, practice, and trial and error. It is not simply a physical phenomenon. The higher order psychomotor domain can embrace learning how to follow mathematical equations, using a piece of software on a computer, or playing a

musical instrument.

- The cognitive domain, concerned with activities based on understanding and thinking. A training example would be to deliver a program working through the steps required to successfully carry out a complex procedure in the workplace. It can involve knowledge, understanding, the ability to see a pattern in things, to evaluate, and to make some decisions.
- The affective domain—the hardest of all for trainers, and a key area of learning skills—concerned with attitude change or attitude development, based on feelings and emotions. It will involve listening, sharing in discussions, the acceptance of values, and creating a values system which underpins behavior.

Within each one of these domains there are various stages or degrees of difficulty. Trainers will work across all three domains and will work at different levels of complexity within each domain. Common sense as well as educational theories tell us that these levels must be taught in the most appropriate way. The argument of the educational psychologists is that in each one of these domains effective learning will take place in different ways. Reece and Walker (2000) point out that for every piece of theory in education there is another one that, while it might not actually contradict the first, will still propose a different way of doing things. In the context of this book, it is safer to say that ideas about domains will offer some general guidance to the trainer in a number of ways, and that there will be common ground between the three types of learning. A good example of this can be found in the training of athletes, where psychomotor skills to do with physical movement will be linked in training to cognition, emotions, and attitudes.

Summary

- By putting learning into types, taxonomies help us to analyze the skills, knowledge, or attitudes which make up the task the trainer wishes to tutor. This helps objective-setting, and gives us some indications of how each kind of learning can be accomplished.
- Because the categories are hierarchical, taxonomies offer some pointers to the structure of a training session.
- They also help to identify appropriate learning activities.
- Setting out the conditions under which the task will be learned, and to a lesser extent detailing the standards to be achieved, also have a

significant practical implication. Good training sessions will include activities which, whether they are case studies, role play, or skills training, will duplicate as closely as possible the actual conditions under which work is done in real-life organizations. The conditions and standards attached to the learning task are a part of this realism.

Objective Setting Again

Bloom's original intention (1964) was to use his categorization as an aid to setting educational objectives. To each domain can be attached a description of the behavior the learner will be able to exhibit at the end of the training. This is a step towards setting the terminal objective. As shown in figure 3.1, the very act of setting objectives gives a potential structure which can be used to organize the content of a training session. The objectives presented in figure 3.1 are hierarchical, and they follow an order from general to specific, becoming more and more detailed as they progress towards the bottom of the inverted pyramid.

Type of Learning	Learning Activity
Skills	Case studies Coaching Demonstrations Description/presentation Practice Questioning
Knowledge-based/ Understanding	Case studies Discussion Games
Attitudes	Questioning Case studies Coaching Discussion Presentations

Figure 3.3 Learning Tasks and Learning Activities

Choosing Learning Activities

Expressing the behavior to be expected of the learner at the end of the

learning will also clarify the learning experiences to be used. For a skills session on playing a scale on the piano, this would involve explanation/description—demonstration—practice. For many training sessions involving skills transmission, the trainer will first demonstrate the skill, then demonstrate and describe it. Without being prescriptive or including all the options, figure 3.3 offers some pointers to appropriate activities for different kinds of learning (Reece and Walker, 2000).

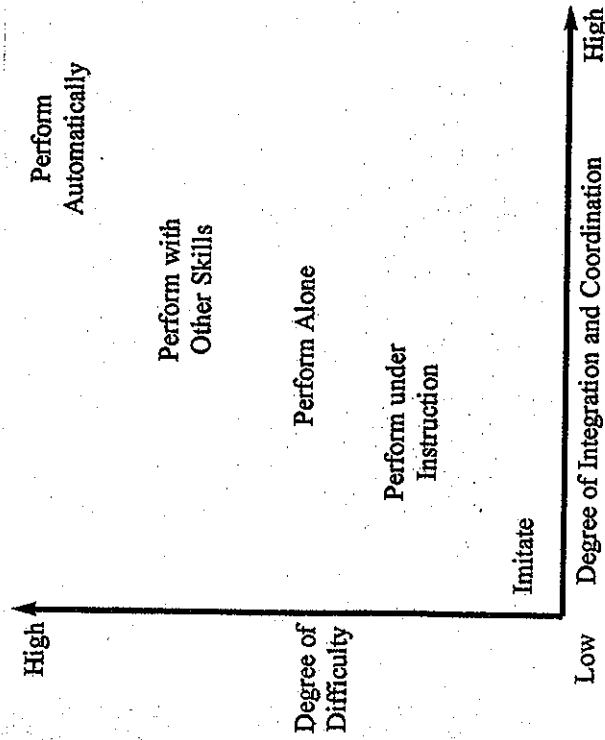


Figure 3.4 Domain Levels as a Basic Psychomotor Training Session Structure

Establishing Structures

Each of the domains is made up of a series of levels. For example, a coach working on a motor skill in athletics will rely on a staged approach which will build on a series of steps in order to produce, by the end of the learning, an automatic performance to the required standard. Each stage will reflect an increasing degree of difficulty, as shown in figure 3.4. The result is a simple structure that can be used in a training session in psychomotor skills. If this idea was to be looked at from the point of view of the trainer, it would indicate a five-part structure for a skills training ses-

sion, as indicated in figure 3.5, but remember that there are many other ways in which a learning sequence can be put together. A similar application of the idea is possible in the cognitive domain, where the progression is a more abstract one in which each level of learning is based on the previous one, with a corresponding increase in the degree of difficulty. This would give a pattern as in figure 3.6.

The basic principle illustrated is that the learning moves from simple to complex, and the session structure can follow the same pattern.

A strategy which will guide the trainer through the session is now beginning to form:

- There is some understanding of the likely characteristics of the learners, from our consideration of learning styles and preferences. In some circumstances this can be supplemented by other information coming from other organizational sources, and will also be added to by some of the activities used in the session (see chapters 6, 7, 8).
- Some objectives have been set, which will help to sketch in a structure for the session.
- The idea of domains or taxonomies provides some more detail on structures.
- The taxonomies also give some further indication of the learning experiences or activities that might be relevant.

Developing the Material

New trainers have a problem with material. Many initial worries will revolve around content: Will there be enough? Will I run out of material? Will it be relevant? Will it be accurate? The answers lie in using a number of well-used, if not hoary old techniques, and following a pattern. The stages and the techniques are described below.

Having a Think

It is surprisingly easy to find some time to sketch out the general area to be covered, consolidate ideas, clarify approaches, identify some of the techniques to be used, mull over possibilities and reject some, so when the need to sit down and write becomes irresistible, some of the ground has

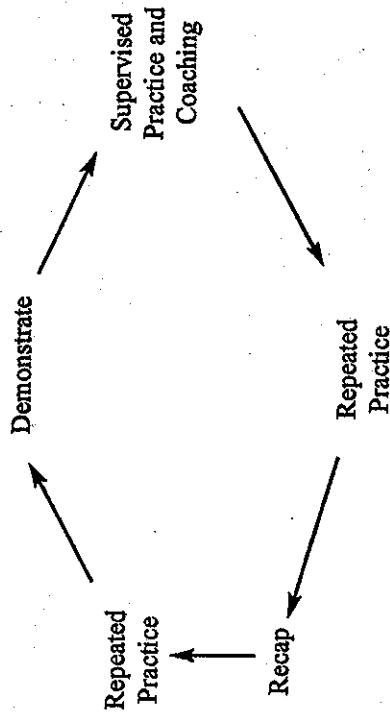


Figure 3.5 A Training Structure for Psychomotor Skills

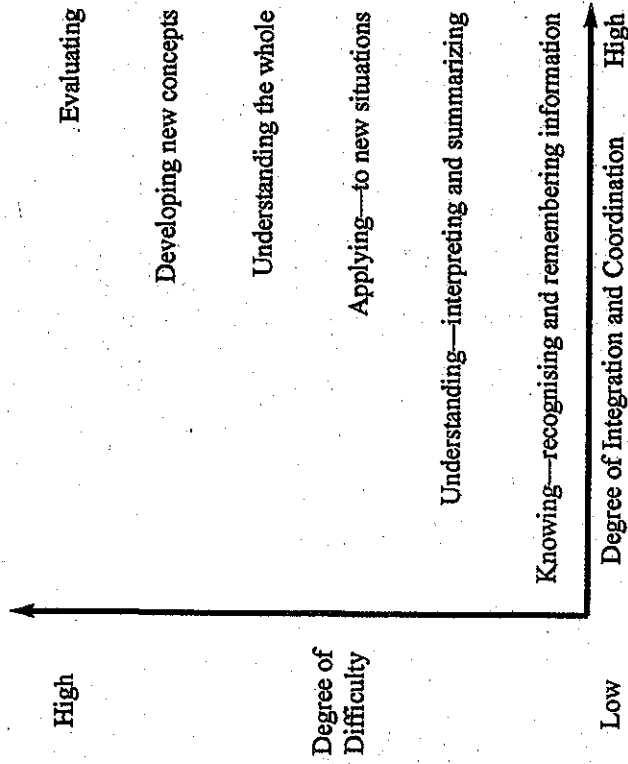


Figure 3.6 Domain Levels as a Basic Cognitive Skills Training Session Structure

been cleared, and the major ideas are beginning to emerge. When a training session is approaching, if it is possible to develop the habit of thinking ahead over a period of time, a number of key areas of content will become clearer. It is also possible to begin to rough out the outline of certain key points. The beginning and end of a session, the links between different parts of the training, and the shift from theory or exposition to participation are some examples of things that can be mentally clarified at an early stage.

Action Point

- Treat this ground-clearing exercise as part of objective-setting, and develop the habit of working some things out before committing to paper.

Ways of Analyzing Topics

In many ways there is still little to beat Derek Rowntree's chapter on generating content (1990), and his earlier work on topic analysis (1974). Jankowicz (1995) did not write a book about training, but wrote what was at the time one of the best and most readable books on business research of all kinds. While this is now dated in a number of ways, it offers some valuable comments on how to generate ideas.

In the literature, there are four basic models of the process of topic analysis. They are all methods of breaking down the subject of the training into its component parts. It is worth remembering what has been done so far. The objectives for the training session have been set, and this has given us some indication of what will be included in the subject matter. It has also given us some indication of the order of events during the training, and the kinds of learning experiences that will be used. This has been done against a background of what is known about how people like to learn. The topic analysis puts flesh on these bones. Davies (1971) adopts a questioning approach, covering what learners will be expected to do at the end of the learning, how their learning will be evaluated, what behavior changes will occur, what indications there will be of the need to learn more, and what problems the learner will be able to solve, or what questions will be answered. Reece and Walker (2000) apply this to analyzing the topic of painting a door. Rowntree's model (1974) is complex, but it

does reflect some of this book's earlier discussion of domains, while Gagne's model (1974) is based on the principle that learning should progress from the simple to the complex.

For practical training, simplicity, brevity, and clarity are vital. Stenhouse (1975) offers all of these through a graphic model that creates a map of the topic to be learned. An even simpler illustration can be found in Bill Murphy's book on presentations (1995). His method is basically the same, but in common with a number of writers, Murphy calls the process generating brain patterns. Tony Buzan (1974, 1976) called it "mind-mapping." Called "brain patterns" it is also used as a tool for change management (Glass, 1998). For an explanation of the thinking behind mind-mapping or brain patterns, look at the "Green Hat Thinking" of Edward de Bono (1971, 1987). The six serving men are also a memorable way of describing de Bono's CoRT (Cognitive Research Trust) skills. These include the CAF process which has been analyzed by many writers. This is where Kipling comes into it. "Who - What - Why - How - Where - When" is a neat and memorable way of expressing CAF—Consider All Factors.

The procedure is straightforward (see figure 3.7), and the method can be simply summarized as follows:

- Write the general topic in the middle of the page.
- Around the general topic, write down the keywords in any order as they occur.
- Keep writing as the train of thought behind each keyword develops.
- Do not analyze or evaluate.
- Forget the logic—the order can be decided by using other means.
- But do not forget Kipling!

Kipling is a vital, if not now politically correct, accessory for the task of creating content. His "Six Honest Serving Men" (1888) are a reminder of the simple questions to constantly ask during this process, and are used to develop ideas by many people who make presentations of all kinds:

- Who?
- What?
- Why?
- How?
- Where?
- When?

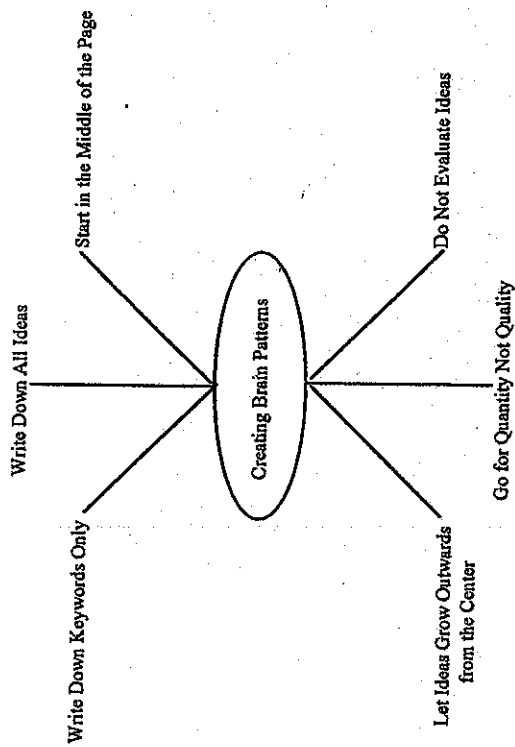


Figure 3.7 Creating Brain Patterns (Bill Murphy, 1995, with permission of Salamander Press)

The benefits are equally clear:

- This is an easier method because it is random: it reflects the way most people think.
- It is not systematic: it can be returned to at any time, and ideas can be written down as and when they occur. It is not even necessary to sit at a desk in order to do it.
- Random activities like this will often help to clear mental blocks or overcome a writing block, but there are also other ways in which this can be achieved.
- Ideas are grouped together, and this begins the task of imposing some order and structure on the material that comes out of the brainstorming session.

Topic Analysis for the Outboard Engine

The way that this works in practice can be shown by returning to the matter of the apprentices receiving instruction in the maintenance of out-

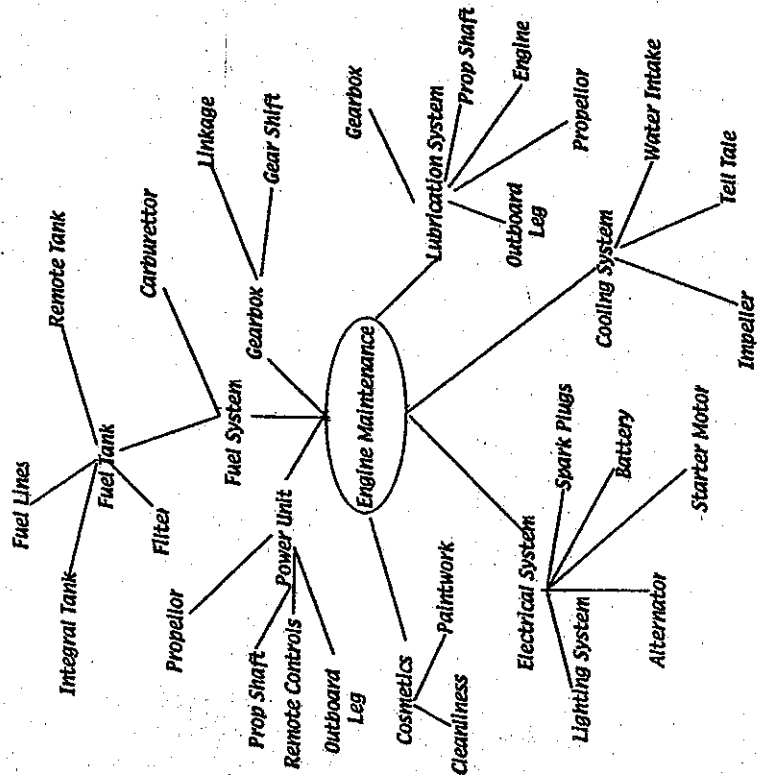


Figure 3.8 Brainstorming Engine Winterizing

board engines. Prior to the training session the instructor could have followed through the procedure described earlier, and illustrated in figure 3.6. Even if the brainstorming exercise that is a part of this is obvious, it is still important, because it ensures that the training session will cover everything that is relevant. It will also help the instructor to group together those elements that are related, and it will act as a check on the logic and the inclusivity of the content. It can also be used to create groups of subtopics that belong together, and it can show the relationships between elements of the content. It therefore points to a possible structure and order for the learning. While a number of other techniques can be used to generate content, they are all arguably more complex than the brainstorming exercise, which also has the advantage of presenting the ideas in a graphic and easily understandable form. In the case of the maintenance class, the end result could look something like figure 3.8.

The result shown in figure 3.8 can then be translated into a basic outline for the training:

Fuel System	Power Unit
Fuel Lines Carburettor	Prop Shaft
Tanks—Remote/Integral	Outboard Leg
Filters Fuel Pump	Propeller
Gearbox	Remote Controls
Linkage Gear Shift	Cooling System
Electrical System	Water Intake
Alternator Spark Plugs	Tell Tale
Battery	Impeller
Starter Motor	Water Pump
Lighting System	
Cosmetics	Lubrication System
Cleanliness	Prop Shaft
Paintwork	Engine
	Outboard Leg
	Cylinders
	Propeller
	Gearbox

Figure 3.9 A Possible Training Session Structure

What is basically the same technique is described in the literature as "concept mapping." This works as follows:

- Write down the key terms in the area to be covered, as they occur to you.
- Look at the list of terms and group related terms together.
- Using arrows, draw the links between the groups of terms.
- Some people describe the nature of the link on the final map.

This approach can sometimes lead to a chaotic topic map, which some trainers like, because it may well show the richness of the concepts or skills being covered.

Summary

- Drawing up the objectives sets the broad outline of content:
- Make the objectives
 - Practical
 - Observable or capable of being assessed
 - Active.
- Use a technique like brain patterns to fill in more detail and begin to create a structure.
- Remember the key questions:
 - Where are we now?
 - Where do we want to be?
 - What do we need to do to get there?
- Make use of Kipling's six honest serving men.
- Indulge in some "green hat thinking."
- Consider All Factors (CAF).

The Content Generation Checklist

1. Are the objectives clear to the learner and the trainer? This is the first step in identifying the broad area to be covered by the content.
2. Do the objectives describe
 - The desired change in the learner?
 - The standard that has to be reached by the new skill, behavior, or attitude? These questions begin to fill in some more of the detail of the content.
3. Do the statements actively describe the desired outcomes?
4. Are the objectives committed to paper?
5. Is the way that the learning is to be tested described fully?
6. Have you used a "ground-clearing process" to clarify things in your own mind before starting to write the material? Has there been enough thinking time?
7. Have you consistently used the major questions—Who? What? Why? Where? When? wherever relevant?