

# **PREPARING A LECTURE**

## **INTRODUCTION**

Lectures have been used since ancient times as a convenient method of communicating information to a large number of people. Convenience, however, is different from efficiency. Lectures are somewhat like primitive steam engines in that they provide a means of delivery, but one that is not particularly efficient. This is especially true when a lecture is being used to communicate information that people need for job performance. With modern technology, we can improve the efficiency of a steam engine considerably to make it a viable option for motive power. The same applies to lectures, because they too can become more efficient by making use of a better understanding of how people learn and by using visual aids.

A lecture gives trainees' specific information that is usually task, job or occupation-related. The trainees need the information for their work and to enable them to discharge their duties correctly. If they don't need the information there is no justification for attending the lecture. A lecture for training purposes should have a clear focus with a specific objective. The information you are providing should be essential to the trainees' performance and, taking an extreme position, failure to learn the information will affect their work.

The Glossary of Training Terms tells us that a lecture is:

*"A straight talk or exposition, possibly using visual or other aids, but without group participation other than through questions at the conclusion."*

## **STAGES INVOLVED IN PREPARING A LECTURE**

We list the process below which we shall follow. We recommend that you prepare the lecture by developing each of these stages in turn, although you may find that you have to go back to modify earlier stages as you work through the process.

- The Objective of a Lecture
- Entry Behaviour
- The Learning Event
- Deciding the Content
- Planning the Sequence
- Planning for Maximum Recall
- Structuring the Lecture
- Use of Visual Aids
- Performance Assessment
- Review
- Feedback

## **THE OBJECTIVE OF A LECTURE**

A possible starting point for your lecture might be to ask "Why are the trainees attending your lecture?" or "What important points and principles do I want the trainees to learn?" However, it might be of more benefit to ask "What must the trainees be able to do at the end of it?"

The answer to this question provides the basis for the objective of the lecture. You will benefit from a clearly defined objective because you can then concentrate solely on providing the information needed to enable the trainees to achieve it.

What is more, trainees benefit from a clearly stated objective, because it tells them what they are expected to be able to do from attending the lecture. Note that something like 25% of the 'doing' might be achieved by simply stating the objective. Trainees can concentrate their thoughts and further study on what should be some clearly stated, needs-related, performance requirements.

The objective is a logical starting point for the lecture. Depending on circumstances you might be given the objective, or be expected to write one yourself. In the latter case this should initially be a draft objective, which may require modification as you take account of entry behaviour, content, time and performance assessment.

A lecture is a means of communicating information and can only be used to **provide trainees with knowledge only**. This means that we need to specify two things in the objective - what the trainees can do after the lecture, and how we are going to check that they can. In other words, the Performance and the Test of Performance.

## **ENTRY BEHAVIOUR**

Much of the success or failure of your lecture will depend on the trainees. Consideration of their entry behaviour will enable you to plan a lecture that is effective for them, enabling the trainees to achieve the objective and preparing them for further learning events. The following points about entry behaviour need to be considered:

- The trainees' existing knowledge and previous learning experience. Awareness of existing knowledge will help you decide where your lecture will start, and the assumptions you can make about previous learning. Awareness of previous learning experiences will also alert you to the trainees' likely attitude and willingness to learn.
- Individual differences between trainees. If your lecture was to be given only to one trainee, you can match your lecture to the trainee. You would sense the trainee's response to your explanation and adjust accordingly. As the learning group grows in number and individual differences in entry behaviour arise, it becomes more difficult to adjust your lecture to suit everyone's entry behaviour. Prior knowledge of the trainees should enable you to prepare a suitable and, therefore, a more effective lecture.

## **THE LEARNING EVENT**

The learning event is the 'live' occasion when you are giving your lecture and communicating to your trainees. We will help their learning if they know:

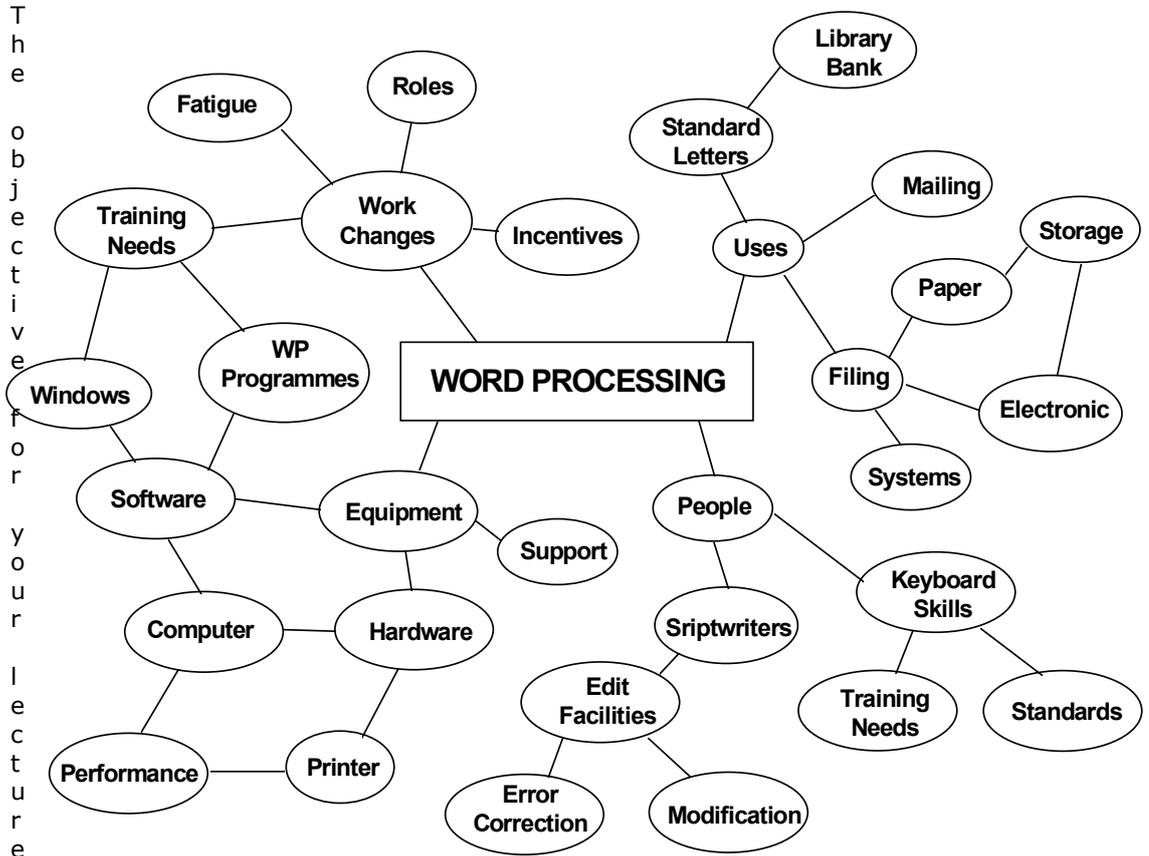
- Where they are going
- How they are going to get there.

The first point has been covered because the objective of the lecture tells them where the lecture is going and what they are expected to achieve when they get there. The second point, how they are going to get there, is dealt with by considering the following aspects of the learning event you are preparing:

- Deciding the content
- Planning the sequence
- Planning for maximum recall
- Structuring the Lecture

- Use of Visual Aids
- Preparing Lecture Notes

**DECIDING THE CONTENT**



should give a clear idea of information you need to communicate. However, in such a short statement it will have left unstated the many small items of information that might or might not be included. A useful technique to identify these items is the use of the 'spray diagram'. The diagram is started by stating the central theme of the objective, say 'Word Processing'. Around this central theme subsidiary elements are added until the diagram looks something like Figure 2.

**ELECTRONIC STRUCTURE OF THE ATOM**



**COMBINATION OF ATOMS**



**IONS IN SOLUTION AND THEIR REACTION**



The diagram is **APPLICATION TO THE SPECIFIC CASE OF RUSTING** far from complete and more subsidiary elements or 'balloons' can be added, each adding a small contribution to the content that might or might not be included in a lecture on 'Word Processing'. There is no real end to this process and the spray diagram can continue to be expanded until we have included all conceivable items of information. We can then edit the content shown on the spray diagram, by:

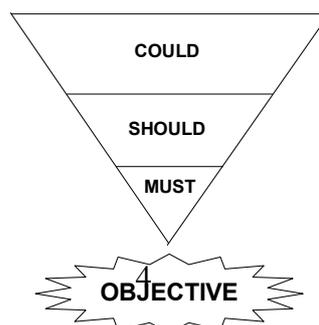
- Saying all the items on the diagram '**could**' be included in your lecture.
- Reducing these 'could' be items to ones that '**should**' be included.
- Reducing these 'should' items still further to ones that '**must**' be included.

The 'must' items form the content of your lecture and study of them may lead you to revise the draft objective. We illustrate the process in Figure 3, below:

Fig. 3

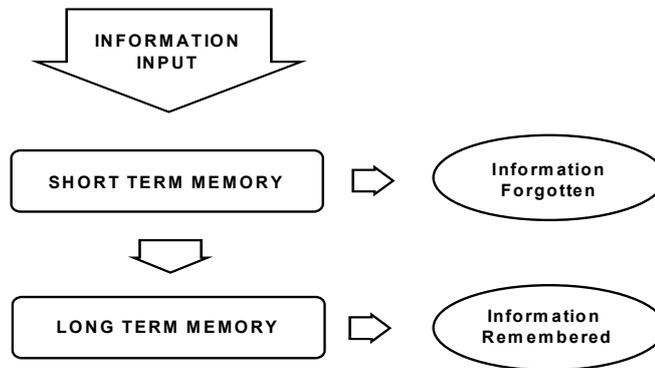
### **PLANNING THE SEQUENCE**

Having a logical sequence is important, but we must be careful. What seems logical to the lecturer may not seem so to the trainee. Consider the example in Figure below, which shows the content of a lecture arranged in a strictly logical sequence:



You will probably have attended lectures planned in this way. You will also recall that there is a lot of work inferred in those four headings before you get to the concrete, specific case with which you are familiar in everyday life. While having preliminary knowledge to understand the phenomenon of rusting may be necessary, this approach to planning the sequence of the lecture runs the risk that many people will 'switch off' because of the apparent irrelevance of the early stages.

Therefore, we what is logical point of view - not view of an expert, practitioner or a guidelines to bear planning is that progressing from



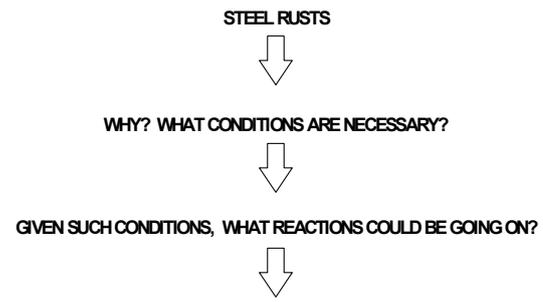
need to consider from a trainee's from the point of a theorist, a researcher. Some in mind when people learn by the:

- Known to the unknown
- Simple to the complex
- Concrete to the abstract
- Observation to the theory
- General to the particular

So why not change the sequence? Start by looking at the situation from the trainees' point of view - find something to 'switch them on', to justify learning the theory. Could we not start with the fact of rusting and ask a sequence of questions that would require theoretical answers at a level we think will suit the trainees? Compare the sequence shown in Fig. 4 with the one in Fig. 5, below, the content of both sequences are essentially the same and would lead to the same objective. The sequence shown in Fig. below takes account of the trainees' entry behaviour and uses a logical build up, free from unnecessary detail.

**PLANNING FOR MAXIMUM RECALL**

The purpose of a lecture is to provide an opportunity for the trainees to acquire information. The objective should acquire items in the relate the the trainees to ways of helping



defines what information they and later recall - the 'must' content. The problem is to information to the capacity of remember it, and to devise them to recall it.

And you can continue to work back as far as you consider necessary

The communication process in the lecture uses the trainee's senses of sight and hearing. This input of information is then stored in the trainee's short-term memory, which has a limited capacity and can retain information for perhaps 5 - 30 seconds. Some information will be passed to the long-term memory, although most of it will be forgotten as illustrated in Fig. 6. To increase the amount remembered, make full use of the trainee's sensory inputs by:

- Emphasising major points, repeating where possible.
- Using visual aids to provide the second medium of communication for the same points.

Decide whether the recall of information can be achieved using:

- The trainee's long-term memory. This means that the trainee can recall from memory the information you provided.
- Notes, handouts, and similar sources of information. The trainee can recall information by referring to handouts etc.

Notice how this might change the objective: in one instance we require that the trainee recall from memory, whereas in the other, they can refer to handouts.

### **PLANNING FOR MAXIMUM RECALL**

The trainee's capacity to recall major points of your lecture may depend upon when you present them. Figure 7 below illustrates in a general way when the maximum level of recall occurs.

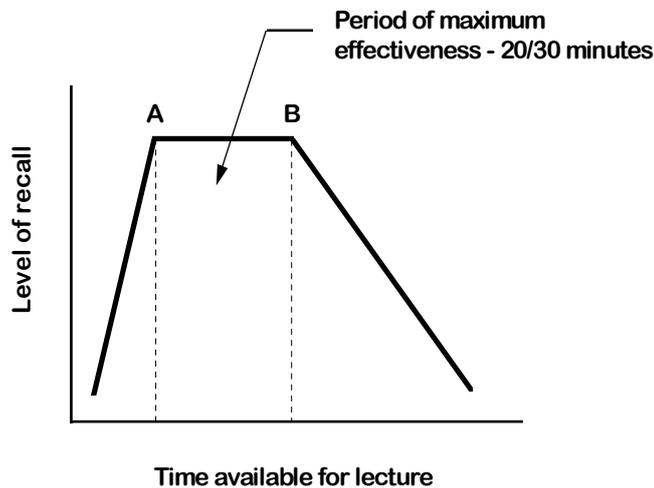


Fig. 7

From Figure 7 we can see that the maximum level of recall occurs after some 20 minutes and can be maintained for about 30 minutes. This suggests that:

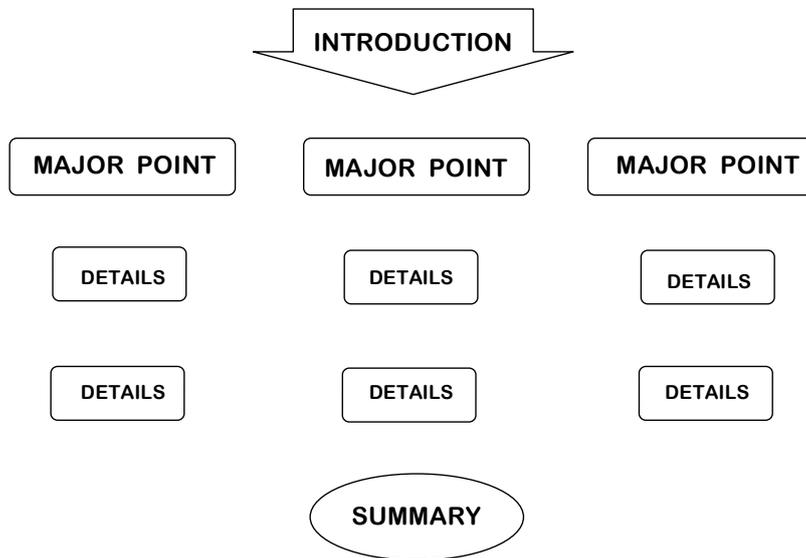
- The earlier period is less effective because the trainee's mind has to adjust to possibly an unfamiliar environment. The more suitable this is, the easier it becomes to reach (A).
- The period will be shortened if the trainees are in familiar surroundings.
- The period length depends on how we introduce the lecture: The better this is, the shorter will be the time to reach full learning recall.

The middle period between (A) and (B) is when learning conditions are most favourable. This is when the major points should be presented. Also, we will lengthen the period if:

- Active participation is encouraged.
- Visual aids and demonstrations are used.
- The trainees know we will give them major points in some form of a handout.
- The learning environment is suitable - at a reasonable temperature, with circulation of fresh air and out of direct sunlight.

Mental and physical fatigue affects the later stages of the lecture after (B). This results in a decline of information retained. (B) provides the time in the lecture when we should summarise the major points. Other points to note are:

- The lecture should be kept as short as possible after (B).
- We can introduce another learning method (for example, a discussion) after (B) to maintain active participation and promote further learning.



If there are facts and explanations that they must remember, some form of a handout would help the trainees. We can regard this as 'post-lecture' learning. The lecture starts the process, and subsequent study aids long term memory storage and recall.

### **STRUCTURING THE LECTURE**

Figure 8, below, shows a basic structure that applies to most lectures:

Fig. 8

### **Introduction**

You should plan to gain the audience's attention by explaining why we are asking that they attend the lecture. We should state the objective of the lecture, so that trainees know what they are expected to achieve. You should explain the lecturing structure you propose to use. Also let the trainees know what to expect and how you want them to participate.

## **Major Points**

This is where you can effectively communicate information. It should be in an organised form that is logical to the trainee. You have around 30 minutes in which you should have the trainee's maximum attention. We should communicate all essential major points during this period. By the end of this period the trainee's attention will be waning and they will be less likely to remember.

## **Summary**

Start this by summarising the major points of the lecture - the ones you expect the trainees to remember. Depending upon the technique used, inviting questions might be necessary.

You can check whether the trainees have achieved the performance stated in the objective. This can be done formally or informally depending on the objective and entry behaviour of the trainees.

Thanking the trainees can complete the lecture and linking what they have achieved to further learning activities.

## **USE OF VISUAL AIDS**

Visual Aids are an essential feature of effective communication. Most lectures are improved by using visual aids that we develop as part of preparation for a lecture. Generally, they are worth using to help trainees learn the major points of the lecture; they should:

### **Attract and Hold Attention**

When trainees are listening passively, their attention is easily distracted. An interesting visual aid can attract and hold attention.

### **Explain Words**

If they do not understand a critical word in a sentence, or is misunderstood, not only does the sentence become useless, we weaken the trainee's belief in the prospect of success.

### **Illustrate Relationships/Concepts**

The saying 'A picture tells a thousand words' holds true.

### **Consolidate Learning**

The key points of a lecture can be presented on an overhead projector or recorded on a flipchart or chalkboard.

Research has shown that we take in more information from the sense of sight than we do from listening, in the ratio of something like:

## **75% Sight**

## **25% Hearing and other senses**

Bearing this in mind, it is not surprising that other studies have shown that lectures using visual aids are far more effective for understanding and recall than lectures that do not use visual aids.

Some further observations about visual aids:

- They should be simple
- Where possible use pictures and diagrams rather than many words.
- Use colour to give contrast to different major points.
- Where possible prepare visual aids before the lecture (e.g. overhead projector transparencies and flipcharts) Do not waste valuable learning time during the lecture.
- Use 'formal' visuals (e.g. an overhead projector) for pre-prepared material, and use chalkboards and flipcharts for 'informal' visuals developed during the lecture.
- Ensure all major points of the lecture are presented visually and orally.

## **PREPARING LECTURE NOTES**

There is no standard format for the notes needed to give a lecture. Some lecturers rely on detailed notes - and many rarely look at them. Some use papers or cards with lists of topic headings as prompts; others rely on their visual aids and use them as prompts; others do not use notes, and however well they lecture one might ask whether their lecture would have been better if they had used them. Some general observations about lecture notes:

- They are there to help you and are therefore personal to you.
- They should be kept as simple as possible.
- They should be easy to read - you might be some distance away from your notes.
- Use colour to ensure we do not miss major points.
- Use sketches to indicate where a visual aid is to be used
- Include a time schedule.

Although your lecture notes are personal to you, there may be occasions when colleagues have to give similar lectures and would probably appreciate reference to your notes. Some training organisations require lecturers to use a standardised format and we attach an example as an appendix.

## **PERFORMANCE ASSESSMENT**

A lecture is rarely the only element in a learning unit or a course. More usually it is used to introduce new information, or start or consolidate other forms of learning. This influences the type of performance assessment used. There are many possible forms of assessment at one extreme are formal written tests, and at the other no assessment whatever. Before deciding the assessment to be used for a lecture, it is worth considering questions such as:

- What sort of information are you communicating? If it is based on a body of facts an objective test might be used, but more complex, conceptual information is difficult to assess in this way.
- How does this lecture link in with other learning? We might develop information and ideas introduced in the lecture in a succession of learning events. Any interim assessment may hinder this process.
- What are the consequences of trainees failing to achieve the objective? Each lecture must be considered individually. Sometimes the consequences of failure to learn are important and justify careful testing; often rigorous assessment cannot be justified.
- How are trainees likely to react to assessment? Depending on entry behaviour, some trainees will expect and may require assessment, others would find it a threatening, demeaning and totally unnecessary experience.

We should state the purpose of the lecture in the 'performance' part of the objective. The second part of the objective, if included, describes how the trainee's achievement is to be measured. Because a lecture is essentially a method of communicating information, it is only this knowledge-based performance that we can measure. This limits assessment to establishing whether trainees can 'describe', 'list', 'state' and so on. Depending on the objective, the importance of the lecture, and the trainee's entry behaviour, we can suggest two general approaches to assessment.

### **Formal Assessment**

Here we give trainees an oral or, more likely, a written test. Recall of knowledge (lower order questions, particularly) can be tested objectively. The trainees can complete the test quickly, it is easily marked and the trainees can get immediate knowledge of results. Open questions can also be used, where trainees have to answer questions in their own words. These are easily set, but are subjective and difficult to assess.

Higher order questions, possibly as assignments, can be given to consolidate learning, and to relate newly acquired knowledge to work situations. Such questions do not offer immediate knowledge of results and should be considered in addition to other assessment measures.

### **Informal Assessment**

Sometimes the trainees' entry behaviour is such that any attempt to use a formal test would lead to discord or undue anxiety. This will be especially apparent in older trainees and where one is dealing with a controversial topic, and there is a possibility of the message of the lecture being rejected. Here performance assessment is based on your observations of trainee responses. The larger the group the more difficult this becomes to manage, but the way people answer questions, participate in discussion and generally respond to your explanation will provide ample proof of achievement. It might be argued that this approach to assessment is not scientific. Probably this is true, but it might be the only practicable way and is certainly better than not trying at all.

## SUMMARY

The purpose of this handout is to help you to prepare a lecture. This is done by suggesting that you use the following procedure:

- Describe in general terms what you believe the trainees need to know.
- Develop a 'spray diagram' to show the possible extent of the content of the lecture.
- Carefully edit the spray diagram to eliminate all points that are not essential to the content of the lecture.
- List the major points of the lecture - the points the trainees must be able to recall.
- Alongside this list, note how you intend to assess whether they have learned the point.
- Review the content, taking a critical look at your list of major points, particularly ones that we cannot assess. Ask yourself whether we MUST include them.
- Write the objective for the lecture.
- Briefly describe the entry behaviour of your trainees. This might be based on precise knowledge, or on certain assumptions that you must make.
- Does the entry behaviour affect the objective? Review the objective if necessary.
- Decide the most appropriate structure for the lecture. Do this by relating the objective, the content, the entry behaviour, and how you propose to assess attainment.
- Structure the content of the lecture, taking into account the:
  - Objective
  - Analysis of the spray diagram
  - Likely entry behaviour
  - Lecture structure you consider the most suitable
  - Time available
- Plan your visual aids in relation to the structure of the lecture. Decide the 'formal' aids you will prepare beforehand, and the 'informal' ones that will be evolved during the lecture.
- Review the structure of the content to ensure that all main points are suitably presented in visual form.
- Prepare your lecture notes and visual aids.
- Run through the lecture mentally to check sequence and logic. Adjust where necessary.
- Check lecture room and the equipment you intend to use.

## FEEDBACK

Trainers plan and implement lectures for the benefit of their trainees. However, the trainers themselves are also presented with a learning opportunity. At the end of a lecture you can ask yourself many questions, ponder over earlier decisions you made, and generally reflect on the changes you would make if asked to do the same lecture again.

The following questions suggest areas for you to consider:

- Was the objective appropriate?
- Was the objective achieved?
- Did you assess the entry behaviour of the trainees correctly?
- How did the content relate to the objective and trainees' learning capabilities?
- Was the sequence appropriate?
- Did you choose the right structure?
- Did you ask questions?
- Were the questions high or low order?
- Did you allow sufficient time to answer questions?
- Did you fit the major points of the lecture into the best learning period?
- Did you communicate the major points of the lecture visually and orally?
- Were your visual aids appropriate to emphasising the major points of the lecture?
- Did the trainees appear to learn from your visual aids?
- Was your introduction appropriate?
- Did you summarise the main points of the lecture?
- How was your timing in relation to your planning?
- Did you feel comfortable with the timing and content of the lecture?
- Did the method of assessing performance suit the trainees?
- Was the assessment of performance valid in relation to the purpose of the lecture?

## LECTURE PLAN

Name of Trainer:

Subject:

Time Available:

Learning Aids Required

Size of Group:

Objective:

Entry Behaviour:

Means of Assessment:

Guidance:

Colour key: Use RED for points that MUST be emphasised

Time - estimate how many minutes will be needed for each part of the content

Content - provide introduction, development of content, and summary.

Aids - indicate which aid is to be used either by a brief note or a sketch.

<b>TIME</b>	<b>DETAILS OF CONTENT</b>	<b>LEARNING AIDS</b>