TRAIN-the-TRAINER

NPC TRAINING PROGRAM

STUDENT HANDOUT

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INTRODUCTION

Course Objective

The objectives for this course are:

- Describe the Adult Learner
- Describe the Concepts of Instruction
- Instructor Roles & Functions
- Setting Objectives
- Planning the learning activities
- Methods of instruction

Learning is personal and distinctive to each individual

ADULT LEARNER

Definition

A mature human being performing social roles typically assigned by our culture to those it considers to be adults (the roles of worker, spouse, responsible citizen, soldier, and the like) and one who perceives him/her self to be essentially responsible for his/her own life.

Working Definition

- A person who will contribute to training or learning activities anytime allowed.
- Someone capable of self directed learning.

Five Characteristics of an Adult Learner

- Personality / Self Concept
- Experience
- Readiness to Learn
- Orientation to Learning
- Motivation.

Personality/Self Concept:

- Adult Learners know what they want and therefore are self-directed.
- Adult Learners learn more quickly when they're allowed to participate in the learning process.
- Adults resist situations that do not allow self-direction.

Experience:

- Adult Learners have lots of experiences that assist learning.
- Depending on the audience age, use their experience to your advantage.

Readiness to Learn:

- Adults enjoy learning to fulfil their jobs.
- Adult Learners don't want to be taught too much. (Don't waste my time.)
- However, not everyone has the same capacity for self-directed learning.

Orientation to Learning:

- Adults are goal oriented.
  - ➢ They want to be shown how a class will help them to attain their goals.
- Adults are relevancy oriented.
  - ➢ They want to see a reason for learning something.

Motivation:

- Adult Learners are more motivated by internal factors, e.g., increased self-esteem.
- They also have deep curiosity to enrich their lives.
- You ***can*** teach an old dog new tricks.

EXERCISE # 1 – 15 minutes

A long time employee has started training on a new piece of equipment. He has six years of experience operating one major piece of equipment that is quite different from the one he is training on. Based on how he reads through the training material and the practice session after your on-the-job training demonstration, you feel he is nervous and unsure of himself. In his old position he did an excellent job. You feel he is quite capable of learning how to operate this new piece of equipment.

Review the characteristics of the adult learner. Which one do you feel is affecting his ability to learn? State how you would propose to overcome this problem.

EXERCISE # 2 – 15 minutes

Two employees in the same group are being trained on a new piece of equipment, which recently has been installed. Your training objective is that they will be able to describe the operating principles and identify the components. Training is being carried out through written training materials, which describe how the equipment works. The training materials are comprehensive, and include both text and pictorial information. The trainees study this material on their own. Included in the material is a self-administered test, which identifies to each trainee whether he or she has met the training objective. You will be giving them a final test at the end of training. You have explained all of this to them and you have let them know you are available to them.

What would you do if the following occurred? Indicate why.

- One trainee admits having a hard time understanding the language in the material.
- One trainee is discouraged because she seems slower in catching on than the others.
- One trainee states that he worked really hard on the material but missed three out of ten questions on the self-test.
- One trainee states that she knows a better way to operate the equipment.
- A senior experienced operator (not one of the trainees) continually contradicts the procedure in the material. This confuses one trainee.
- A technical error is found in the written material.
- After two weeks both trainees state they don't have time during their shift to study.
- Both trainees say that they are ready for the final test and you believe they are.

Learning

The teacher of adults needs to have a basic understanding of learning in order to develop objectives appropriate to identified learning outcomes. **Learning can be defined as a change in the individual brought about by interaction of the individual with his/her environment that fills a need or makes the individual more capable of dealing with the environment**. Thus, learning is an active process that results in a change of behavior. Such a change in the learner may come about as a result of:

1. Acquiring a new skill.
2. Acquiring new ideas or concepts.
3. A change in attitude brought about by new insight toward a particular subject.
4. A combination of the above.

There are five basic types of learning outcomes that can result from the countless learning tasks in any subject. A learning task is a separate action to be learned. Naming the letter "A", distinguishing between red and blue, and learning the purpose of a microchip, are examples of learning tasks. The five learning outcomes identified are:

- Language skills
- Intellectual skills
- Cognitive strategies
- Motor skills
- Attitudes

Learning Outcomes

1. **Language skills:** an individual's ability to say, write or otherwise use information in a sentence, e.g., listing the basic tools of the auto mechanic; giving dates for historical events.

2. **Intellectual Skills:** mental skills or skills involved whenever an individual performs an activity that requires mental processing such as distinguishing varieties of objects, forming classifications, or applying the rules of language or mathematics. Usually requires learning prior skills, e.g., a bricklayer calculating the amounts of ingredients necessary to mix a quantity of mortar.

3. **Cognitive Strategies:** novel to the learner; the learner has no prescribed set of rules for solving a problem, but instead must develop a new strategy. Involves the transfer of previous learning (language skills, intellectual skills) to a new problem, e.g., improvising by converting specific tools to other uses to make a mechanical repair.

4. **Motor Skills:** involve muscular activity and have some direct impact on objects in the environment. Action often composed of a series of separate movements. The procedure for these movements is called the executive subroutine. The ability to execute a penalty kick in soccer is an example of a motor skill. The executive subroutine consists of placing the ball, noting the position of the net, determining the location of the goal tender, standing a little distance from the ball, then running up to the ball and kicking it.

5. **Attitudes:** learned tendencies that influence the choice of personal action toward things, events or persons. The special feature of learning attitudes is the existence of the possibility of reward when the preferred behavior is present.

To assist you in understanding the five learning outcomes described above, complete Exercise three on the following page.

EXERCISE # 3 – 15 minutes

Below are listed a number of learning outcomes that were drawn from many different types of courses. For each one, identify the type of learning outcome. An example is given.

Learning Outcomes	Type
Example: Diaper a baby.	*Motor skill*
1. Select the appropriate iron and solder for the task.	
2. Remove filter assembly.	
3. Prefer to use seat belts when driving.	
4. List main checkpoints for pruning a tree.	
5. Shape a tree to the desired crown.	
6. Discuss proposed hairstyles with client and obtain agreement in the style to be used.	
7. Decide whether to adjust, clean, or replace spark plugs.	
8. Keep a daily record of sales and inventory for a store.	
9. Develop a system for color-coding course handouts.	
10. Choose to teach adults rather than children.	
11. Determine that a joint needs to be soldered.	
12. Place soldering iron on a joint that needs to be soldered.	
13. Show pride in one's personal appearance.	
14. Dress appropriately for a special occasion.	
15. List the basic food groups as identified in the Food Pyramid.	
16. Explain how the basic food groups meet nutritional requirements.	
17. Prefer to prepare meals containing each of the basic food groups.	

Learning can be enhanced for your adult learners when the following conditions exist:

- Learning tasks are arranged in a logical sequence, moving from simple tasks to more complicated tasks.

- Activities involve the learners.

- Opportunities are provided to the learners for practicing new skills and applying new information in solving real problems.

- Positive reinforcement is utilized in the learning situation that increases the probability that the desired behavior will be repeated (recognition, rewards, etc.).

- Learning new information is built upon learners' previous experiences.

- An informal learning environment is created.

- A variety of teaching methods are used to maintain their interest.

The Five Senses and Learning

Learning occurs through one or more of our five senses. The senses contribute to learning in approximately the following proportions:

- SIGHT – 75%
- HEARING – 13%
- TOUCH – 6%
- TASTE – 3%
- SMELL – 3%

The Three Domains of Learning

- **To develop a skillful, knowledgeable, and safety-conscious employee, you must consider all areas of learning:**
  - Psychomotor Learning (Skill)
  - Cognitive Learning (Knowledge)
  - Affective Learning (Attitudes)

Psychomotor Learning (Skill):

- Skill learning is physical learning, training your body to perform specific physical operations. Some examples are as follows:
  - Walking
  - Climbing a ladder
  - Turning a screwdriver
  - Typing

- Skills are learned through practice and are perfected by repetition.

Cognitive Learning (Knowledge)

- Knowledge is the information that we have stored in our memory. Some examples are as follows:
  - 2+2=4
  - can't push a rope (unless its frozen)

- Knowledge learning depends on the individual's ability to memorize.

Affective Learning (Attitudes)

- Affective learning is learning which affects the attitudes we have about things. Some examples are as follows:
  - The way we feel about the law
  - Rules (seat belts)
  - Culture

Attitudes

Attitudes are emotional tendencies to respond toward an attitude object. The attitude of an individual is inferred from the individual's behaviour and is often influenced by personality, but mostly by the situation and environment in which the individual lives and works.

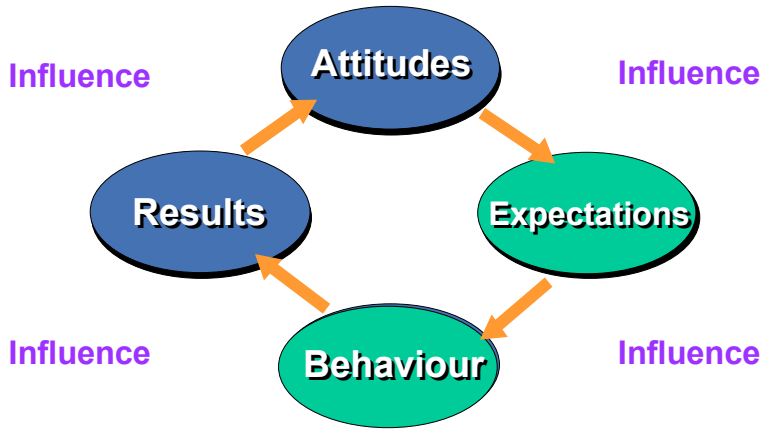
The following are three common components that influence our attitude and ultimately lead us toward our cultural beliefs.

ATTITUDE COMPONENTS

Beliefs	Feelings	Intentions
Perceptions about attitude object Developed by experience and social reality	Pleasant or unpleasant emotions towards attitude object	Motivation to engage in a particular behaviour towards attitude object

The "Attitude Cycle" is representative of how our attitude can be influenced and will change over time based on our perception of results being positive or negative influencers:

Attitude Cycle



When do Adults Learn best?

- Three factors affect learning:
  - *Desire* on the part of the learner
  - Amount of *stress* encountered in the learning situation
  - The type of *support* given by the rest of the group

When do adults learn best?

There is no one best way. There are a number of sound methods and procedures that you can follow. Generally adults learn best when:

- They know exactly where they are starting from and what they are expected to be able to do upon completion of training.
- The knowledge, skills, and attitudes necessary for correct performance are presented in a logical sequence.
- The material is presented to them in steps small enough to be practised.
- They are allowed to progress at their own pace.
- They are actively involved in the process of learning rather than listening passively.
- They are given immediate feedback on their progress. They are praised for a correct performance and corrected in their errors.
- They are kept in an inquiring state of mind throughout the learning experience.

Principles of Instruction

- The following principles have been derived to help the instructor:
  - **Understanding**: Instruction must start at the level of student understanding and proceed at the rate of student comprehension.
  - **Emphasis**: Lessons must emphasize and support the objectives.
  - **Interest**: Lessons must create and maintain student interest.
  - **Success**: Lessons must provide for student success.
  - **Participation**: Lessons must provide confirmation of student learning.

Classifications of Adult Learners

As people, we have many developmental tasks to accomplish as we age. Each task is ordered. That is, before the second one can be accomplished, the first must be achieved or almost achieved. Three classifications give us, as trainers, a useful way of thinking about adult learners. They help us to understand why our job is so important in assisting adults adjust to changing conditions and continue to thrive as they grow older.

- **Early Adulthood (18-30 years)**
  - Selecting a mate
  - Learning to live with a marriage partner or leaving the marriage
  - Starting a family and raising children
  - Managing a home
  - Getting started in an occupation
  - Finding a congenial social group

- **Middle Years (30-55 years)**
  - Achieving adult civic and social responsibility
  - Establishing and maintaining an economic standard of living
  - Assisting teenage children to become responsible and happy adults
  - Developing adult leisure-time activities
  - Relating to one's spouse or leaving the marriage
  - Accepting and adjusting to the physiological changes of middle age
  - Adjusting to aging parents

- **Later Maturity (55 years and up)**
  - Adjusting to decreased physical strength and health
  - Adjusting to retirement and reduced income
  - Adjusting to the loss (death) of a spouse
  - Establishing an affiliation with one's age group
  - Meeting social and civic obligations
  - Establishing satisfactory physical living arrangements

CONCEPTS OF INSTRUCTION

The Four "W's"

- What
- Why
- Where
- When

  - What: To develop an effective and relevant lesson.
  - Why: To provide knowledge and/or skill.
  - Where: In an appropriate environment (classroom or workplace).
  - When: Before someone is left to do the job by themselves.

Four (4) Stages of Instruction

- Stage 1: ICE (Interest, Comprehension, Emphasis)
- Stage 2: PAC (Participation, Accomplishment, Confirmation)
- Stage 3: Verbal Support
- Stage 4: Oral Questions

Stage 1 – ICE (interest, comprehension, emphasis)

How Do You Build Interest?

- Tell them What, Where and Why.
- Demonstrate finished product.
- State advantages/disadvantages.
- Use a variety of training aids.
- Project enthusiasm in your class.

- Team Teach wherever possible.
- Inject as much realism as possible.

Comprehension:

♦ **Before the lesson:**

- Do lots of research on your topic.
- Develop a well-prepared lesson plan.

♦ **During the lesson**

- Consider a Threshold Knowledge Test.
- Instruct to the majority.
- State the approach in the introduction.
- Observe your student's reactions.
- Keep them involved with questions.
- Use your verbal aids.
- Employ a logical sequence.

♦ **After the lesson**

- Provide handouts.
- Offer remedial help
- Brief the next instructor - problems.

Emphasis:

- Have clear objectives.
- Emphasize control statements.
- Teach by stages.
- Confirm each stage.
- Use training aids and equipment properly.
- Use allocated time wisely.
- Produce and give handouts.
- Use verbal emphasis.

- Reinforce critical points.
- Have equipment for each student.

Stage 2 – PAC (participation, accomplishment, confirmation)

Participation

- Encourage class to develop Teaching Points.
- Encourage expression.
- Use questions in knowledge lessons.
- Use practice in skill lessons.

Accomplishment

- Announce the Test.
- Let them know what's expected.
- Give a logical presentation.
- Teach step by step.
- Praise good work.
- Cover / reinforce weak areas.
- Advise on test results as soon as possible.
- Re-motivate your class.
- Restate the WHY.
- Do a thorough review.
- Cover all points in the confirmation stage.
- Summarize your lesson effectively.
- Make time for TOTAL PRACTICE.

Confirmation

- Use review questions.
- Confirm each stage.
- Summarize knowledge lesson.
- Conduct a total practice in skill lesson.
- Test all Teaching Points.
- Give Test Results as soon as possible.

- Give Assignments.

Remember, these points will make your lesson better:

- **I**nterest
- **C**omprehension
- **E**mphasis
- **P**articipation
- **A**ccomplishment
- **C**onfirmation

Stage 3 – Verbal Support

♦ **Why Verbal Support is needed**

- Creates interest.
- Clarifies and illustrates Teaching Points.
- Adds variety.

♦ **Types of Verbal Support**

- Comparisons
- Reasons
- Examples
- Statistics
- Testimony

♦ **Why do we need verbal support?**

- Creates interest.
- Clarifies and illustrates Teaching Points
- Adds variety.

Stage 4 – Oral Questions

- Purposes of oral questions
- Qualities of oral questions
- 2 types of oral questions
- 2 types of questioning process
- Questioning technique

Purposes of Oral Questions

- Arouse and maintain interest
- Promote mental activity
- Guide thinking
- Evaluate learning

Qualities of Oral Questions

- Easily understood
- Composed of common words
- Thought provoking
- Relevant to the Teaching Points

2 Types of Oral Questions

- Open questions
- Closed questions

What is your definition of these types of questions?

- **Open questions** allow for explanation and provide the questioner with far greater information. They allow the responder to elaborate and impart everything they know about the topic. For example: "Tell me about your near-miss reporting program."

- **Closed questions** can be answered with a simple yes or no, but are limited as far as their application because additional information that illustrates the answer is missing. For example: "You have a near-miss reporting program here, don't you?" What information might be missed in the answer to this question?

2 Types of Questioning Processes

Leading Questioning Process

- To initiate development of Teaching Points.
- To further develop Teaching Points based on what has already been said.

Confirmation Questioning Process

- End of each stage.
- Enables instructor to check that learning has taken place.
- Answers should confirm Teaching Points.

Questioning Technique

Questioning Technique has five (5) steps:

- Ask the question.
- Pause.
- Designate a person to answer.
- Listen to the answer.
- Confirm.

INSTRUCTOR'S ROLES AND FUNCTIONS

Stage 1 – Instructor's Roles and Functions

- Leader
- Counsellor
- Evaluator
- Tutor

LEADER

- Provide example of conduct.
- Maintain high level of integrity.
- Provide clear demonstrations.

COUNSELLOR

- Help students adjust.
- Refer students to supplementary sources of information or to other subject matter experts if they request more detailed explanations.
- Establish working relationship.
- Observe student attitudes/ behaviors.

EVALUATOR

- Determine student success.
- Assess and inform.
- Explain assessment.
- Encourage and compliment.

TUTOR

- Aware of student abilities.
- Individual attention.
- Understand student strengths.

- Prescribe additional reading.

Stage 2 – Instructor Responsibilities

♦ **Ensure Training Occurs ***

- We'll discuss the following:
  - Actions before training
  - Actions during training
  - Actions after training

BEFORE TRAINING:

- Set time and location.
- Research topic.
- Check class roster.
- Prepare classroom or area.
- Review and rehearse.
- Check training aids.

DURING TRAINING:

- Begin and end on time.
- Give scheduled breaks.
- Maintain control.
- Consider health and safety.

AFTER TRAINING:

- Secure materials/equipment.
- Rearrange room/area.
- Clean room.
- Evaluate learning.
- Maintain training records.

Stage 3 – Instructor Characteristics

- **Positive Traits**

- **Negative Traits**

Positive Traits

- Subject knowledge.
- Effective communicator.
- Knowledgeable of students' needs.
- Sincere desire to help.
- Enthusiasm.

Negative Traits

- Arrogance.
- Ridicule.
- Sarcasm.
- Time Waster.
- The Reader.

Success of the Instructor

- Mediocre trainer tells.
- Good trainer explains.
- Superior trainer demonstrates.
- Great trainer inspires.

SETTING OBJECTIVES

There are four major variables that an instructor must consider when deciding what to teach - or what the students should learn. These are:

(1) Course Objectives - These are the skills, knowledge and attitudes that you hope the student will master during the course. These, however, are affected considerably by the following three variables.

(2) The Student - Whatever you do, you must start where the student is. You must consider his previous training and experience and start at his level of competence.

(3) Time Available - More often than not, you will want to cover more material or meet more objectives than you have time for. The list of objectives written in order of priority will assist you in determining which objectives to include and which to delete.

(4) Resources - such as equipment, type of rooms, print and other instructional materials affect your ability to establish a learning situation.

This section focuses mainly on objectives, however you must always consider the student, the time, and the resources available when setting objectives.

Instructional Performance Objectives

A good objective helps in answering the following questions:

(1) What am I going to teach or, more precisely:

- What should the students be able to do as a result of the instruction?
- What is the content that will enable the student to learn what is required?

(2) How am I going to teach the objectives?

- What are the methods and procedures that are appropriate for instructing the content?
- What principles of learning can be used to ensure efficient and effective learning?
- How can I manage the learning environment to maximize the achievement of the objectives by the trainees?

(3) How will I know if the students have learned it?

Question (1) is the most important to answer because all others are derived from it. This is especially evident when you get to evaluation. Clearly defined objectives make evaluation obvious. The learner can either do it, or he can't.

Non-performance objectives should be avoided. These describe the process or content of instruction, instructor activities or non-observable results of learning. They are not written in terms of what the students can or should be able to do.

The following is a list of sample instructional performance objectives.

- At the completion of this lesson, the trainee will be able to service a spark plug in 3 minutes.
- Given a floor scrubber, the trainee will be able to clean 100 metres of hallway in 2 hours.
- At the completion of this lesson, the trainee will be able to calculate the staff required to clean a hospital wing of a given area.
- At the completion of this training module, the trainee will be able to list four reasons for making a trip out of the hole.
- At the completion of this lesson, the trainee will be able to change a fluorescent light bulb in 10 minutes.

How do we determine what to include in a course?

Determining what to teach in a course is a process of compromise – in which you balance the needs as determined from the occupational analysis with the student's previous

experience and training, the time allotted to conduct the training and the kinds of resources, equipment and facilities available. From all this results a plan for what you intend to do during your course. This plan, however, should not be rigid, but must be continually modified (because of student input and reaction) in order to best meet the needs of that particular group of trainees.

Writing Training (Performance) Objectives

Performance Objectives:

- Indicate what a learner will be able to do upon completion of the course or unit of instruction.
- Direct you, the instructor, on how to set up a learning situation in which the learner can meet the objectives.
- Tell you and the learner when learning has occurred. Evaluation is simple and accurate.

Performance objectives are:

- Written in terms of the learner.
- Start with or contains an action verb.
- May include the phrase, "The learner will be able to……."

A performance objective includes one or more of the following elements.

- Be stated in terms of the learner's terminal behaviour or performance.
- State, where necessary, the conditions under which the performance will be judged.
- State, where necessary, the criteria by which the performance will be evaluated.

The first element is always required. The second and third elements are required when there may be ambiguity in interpreting the meaning.

PLANNING THE LEARNING ACTIVITIES

Planning how the learner is to learn involves determining what the learner should learn and how he can best go about learning it.

What should the learner learn?

When you have completed the training plans for all of the jobs within an occupational group, you have firmly established the knowledge and skills that are necessary for a worker to work in that occupation, and the training that will be required to qualify him as competent.

The next thing you will want to determine is where the worker should start on his training program. Remember that he should start at a point that is equal to his present capability, and progress from there.

For the green man off the street, the decision is simple. He starts at the beginning. However, for the worker with some experience, the decision may be more difficult. The most straightforward way of determining where the individual should start is by using the "show me" technique.

The first step in the show me technique is to sit down with the worker and have him tell you which jobs he can do, and which ones he can't. Keep a record of what he says he can do.

Next, you will want to satisfy yourself that he knows the theory and safety aspects of the jobs he says he can do. This can be accomplished by questioning or by the use of a test.

When you are satisfied that he has the knowledge required to do the job, the last step is to watch him do it. The criterion for success on his part is very simple. He can do the job based on the performance objectives specified or he cannot. After you have watched him

perform, there will be no doubt about where he should start his training, and there will be no room for argument from either party.

This technique works equally well for new employees, or for current employees who require additional training.

Special Needs of the New Employee

New employees to the company have special needs that are over and above their on-the-job training needs. This is especially true for workers who have no previous experience in the industry or in the specific occupation they will be entering. These same considerations may also be applied to current employees who are transferred or promoted.

Generally, the indoctrination process for new employees can be broken down into three phases.

The first phase of the indoctrination process is concerned with providing base information about the job the man will be doing and the company he will be working for. Most new employees would like to know a little about the job they will be doing. Will it be inside or outside, running a machine or working behind a desk, etc? They also want to know a little about the company. What are its history, its future, will it still be in business next year, what products or services does it provide, and any other pertinent facts. The employee should also find out at this stage the details of the job. What is the pay, the hours of work, the benefits, the company rules and regulations and when is payday. He should be advised of any special tools or clothing that he will be expected to bring with him to the job. During this phase, the necessary documents and paper work should be completed, and the employee should be given any tests that are required (medical, hearing, etc.).

The supervisor may be responsible for this phase of the indoctrination, but usually someone in a personnel position does it. A lot of time can be saved if there is a brochure or handout that the employee can read to answer many of these questions.

The second phase of the indoctrination begins when the employee arrives at the job site. He should first be introduced to his supervisor and immediately issued with any protective clothing or equipment that he will require. He should then be taken to the place where he will be working, shown around, introduced to his fellow workers and made aware of any hazards of dangerous situations. While this is going on, the supervisor can find out about the new employee's background, experience, and any other information that may be required. If the employee will be starting work in a hazardous location with which he is unfamiliar, this would be a good time to provide some formal training on safety and the hazards of the job.

The major intent of the training would be to keep him alive for his first week on the job. The length of the course could be from a few hours to a few days, depending on the circumstances. Again, handouts and other resource materials will help the worker get started on the right foot.

The third phase of the indoctrination process is the actual in-house or on-the-job training. This training should start as soon as possible, and should be started at a point consistent with his experience and ability. The worker should be under constant supervision until the supervisor is satisfied that he can perform his job safely and correctly. This phase will continue until the worker becomes competent at this occupation.

For the new employee, the first week is critical. By the end of the week, he will have established attitudes towards the company, his job, safety and his fellow workers. The kind of attitudes he develops will depend to a great extent on the way he is treated and the examples that are set by the people he works with. If his attitude is positive, he may very well become a valued employee to the company. If his attitude is bad, he probably won't be around long, and the time and money you invested in him will be wasted.

When dealing with new employees, it's a good idea to think back to your first day on the job. The kinds of fears and expectations you had then are probably the same as the ones he has now.

Prepare Lesson Plans

A lesson plan is an essential tool of even the most experienced instructor. It guides and directs a smooth presentation, leaving the instructor free to interact with his trainees, rather than trying to remember what he should do next.

Why is daily lesson planning so vital to the instructional process?

An analogy of the cook in the kitchen shows why novices attempting to create an edible meal need to know when the meal is to be served and how much time each item needs to cook before they can know when to start each item. They need recipes to show them how to prepare each item. These recipes indicate time, quantities, order. They need to know what foods go best with other foods to make a well-balanced meal. In other words, they need to plan in advance. As these cooks become more and more proficient, their planning stages may become less visible to an onlooker, but they are still there. They just come more easily, since they have developed the habit of thinking in planning patterns.

Likewise, trainers need to prepare thorough plans to guide their instructional efforts. In order to make a plan, you have to think through:

(1) Where you're going.

(2) How you're going to get there.

(3) How you'll know when you've arrived.

You are visualizing just what you will do when you walk into the classroom. In addition, through good planning you can anticipate problems and plan, in advance, to eliminate or overcome them. You have probably had the experience of studying for an exam and feeling you really knew the material - that is until you were asked to use it on the test. At this point you realize that you were just aware of the material. When you have to explain material to someone else, an in-depth comprehension of the material is needed. This takes careful planning, and through the planning process one really masters the material.

Planning also allows you to anticipate what your needs will be for supplies, tools, equipment, and other support materials. All of these organizational efforts are ultimately a time saver. As you plan on paper, you will weed out the extraneous and save the essential.

In the classroom, the plan serves as a handy guide during the presentation. The fact that your lesson is well planned should give you confidence, give your students a sense of security, and give your lesson a sense of purpose and direction.

The lesson plan should contain the following, but not necessarily in this order.

(1) The course or program being presented.

(2) The topic or subject of this lesson.

(3) Instructor's name.

(4) General objectives. Describe in general terms the skill, ability and/or attitude that you are expecting the learners to develop as a result of this lesson, from your point of view.

(5) The conditions under which this lesson will be presented. This may include such factors as time, location, classroom set-up and other conditions that you want to establish to create an appropriate learning environment.

(6) Instructional (performance) objectives. Clearly stated performance objectives that describe the specific terminal behaviours you expect the learners to achieve by the end of the session. These may come directly from the training program development documents such as the Occupational Analysis or the Job Procedures.

(7) Motivators. What are you going to say or do to make the students want to learn this material, skill, etc.?

(8) Review of previous lesson or lessons to ensure a pre-requisite level of understanding and to help tie a series of lessons together.

(9) Overview of the lesson to be presented. Provide something to catch the learner's attention, to introduce the lesson, and to help the learner get mentally and/or physically ready. This could be a good place to use a motivator, and with the review of the previous lesson, helps to tie the lessons together.

(10) Presentation of the lesson content material. This is the "meat" of the lesson, usually written in point form so you can follow it easily as you present the material. This section should include the techniques or methods you plan to utilize (for example, discussion, lecture, demonstration) at the various stages of the lesson, analogies, jokes, stories that support the material being presented, timing, sequence, questions, etc., that form part of the body of the lesson.

11) Exercises and other student activities you plan to use to allow for the - application of the lesson content material. Remember only "perfect practice makes perfect."

(12) Summary of the lesson just presented as a review of the most important points presented.

(13) The learning resources that you will be using to supplement your instruction and enhance learning. Make a check list of all the resources you will require, including audio-visual equipment, print materials, films, videos, etc. Be sure to note on your lesson plan where these will be keyed into the lesson.

(14) Evaluation. How you plan to evaluate the learners on their achievement of the objectives for this lesson.

Lesson Plan Formats

There are many formats that can be used successfully when writing a lesson plan. The organization you work for may have adopted a lesson plan format they would prefer that you use. If not, you should select a format which allows you to include all of the necessary information about the lesson, sequenced properly and with learning activities, resources, etc. keyed-in at the appropriate places. There is no one format that is better or worse than another.

It is important that each instructor develop their own lesson plans for the courses they will be instructing. Since each instructor has a different "style" and may utilize differing methods and techniques to achieve the same objectives, the lesson plan should reflect these individual characteristics. It is difficult to present a lesson from someone else's lesson plan.

Checklist For Lesson Planning

Before the class presentation:

As you prepare and before you present your session, answer the following:

1. Have I written the specific objectives for this session?	Yes	No
2. Have I evaluated my specific objectives to see if any could be eliminated because of lack of importance?	Yes	No
3. Have I considered where I might use personal experiences to assist the students?	Yes	No
4. Have I considered questions that will draw from class members experiences to support the specific objectives?	Yes	No
5. Have I arranged for all materials needed for teaching this lesson effectively?	Yes	No
6. Have I considered the students' needs?	Yes	No
7. Have I made provisions to show the idea being taught?	Yes	No

8. Have I made provision for the students to discuss the idea being taught
   a) among themselves? Yes No
   b) as a class? Yes No
   c) with me? Yes No

9. Have I made provision for the students to apply or practice objectives being taught
   a) in class? Yes No
   b) following class? Yes No

10. Have I determined how to summarize my lesson effectively? Yes No

11 . Have I determined how I am going to evaluate what the students have learned? Yes No

12. Have my plans included an assignment? Yes No

METHODS OF INSTRUCTION

The two key elements in the learning process are the instructor or trainer and the student or trainee.

The effectiveness and efficiency of learning are very much affected by what goes on between the instructor and the learner. It is this process of instruction that is so important.

This section summarizes two aspects of instruction.

(1) Instructional Methods or the different ways of presenting material.

(2) Instructional Behaviours or the ways that an instructor interacts with the learner.

Instructional Methods

Instructional methods refer to the different ways of presenting material and include lecturing, demonstration, discussion, student practice, audio-visual aids, etc. The different methods are summarized, and their appropriateness for specific situations and their advantages and disadvantages are briefly discussed.

(A) Lecture

Lecturing is a formal oral presentation of information by the instructor. It is often supplemented by any number of related teaching aids or instructional materials.

(1) Advantages

(a) Economical in terms of time and material.

(b) Useful in motivating students.

(c) Necessary when introducing a new topic or summarizing a unit of instruction.

(d) Useful in clarifying objectives, concepts, etc.

(e) Can be used to channel the thinking of a group of students in predetermined directions.

(2) Disadvantages

(a) Does not foster the development of creative thinking, problem solving, or application of what is learned.

(b) Requires a base of concrete experiences before a concept can be learned.

c) Difficult to maintain attention of all students for more than fifteen minutes.

(B) Demonstration

The demonstration is a visual explanation of a selected idea, concept, skill or procedure and is usually accompanied by a verbal explanation. It may be conducted in a "real" setting or by using models or educational equipment. The demonstration is most effective when introducing new skills to the learner or teaching how to operate equipment. The advantage of the demonstration is that students can see how something is done. Once the demonstration is completed the students should be given an opportunity to practice (under supervision).

(C) Shop Practice and Laboratories

Shop work is essential in the application of theory or knowledge to the actual job situation. All activities must be carried out under the constant supervision of the instructor who now takes on a role similar to that of a foreman.

He is available to answer questions, to point out errors or alternatives and to ensure that safety regulations are followed.

Time must be given for repetition, so that skills become habits.

Practice makes perfect; ensure that the correct skill or habit is perfected.

(D) Discussion

A discussion is an excellent way of developing an understanding of concepts that already have been presented. It requires, however, that students and instructors be well prepared; the aspects that require attention and clarification must be clearly identified and both instructor and students must be familiar with the procedures of carrying out discussions. A discussion can give students practice in thinking, provide feedback, motivate and individualize. The students should be encouraged to experiment and discover new ways of relating the concepts to their past experiences.

(E) Individual Study

Under a process of guided learning, whereby the instructor arranges and organizes objectives, experiences, written materials and demonstrations, a student may receive the necessary background to arrive at certain conclusions, concepts or skills on his own. There is still a need for the student to be able to receive some instruction, generally in the form of tutorials. At some point in time, the student should be tested to ensure that he has mastered the objectives.

(F) Assignments

Smaller assignments and larger projects constitute the backbone of technical and industrial education. As in shop or lab practice, assignments provide the opportunity to apply theory and knowledge. Assignments should start at the point that a student is and should gradually increase in complexity as the training progresses. Each assignment should present a challenge; if there is no challenge, boredom sets in; if there is too much challenge, the student becomes frustrated.

In the preparation of assignments, the instructor should devise problems or projects that are relevant to the on-the-job situation. They should reflect the kind of work expected from the beginner practitioner or moderately advanced practitioner in the field.

Assignments, at least initially, should be simplified and should be accompanied by instructions that students can understand clearly. The instructor should ensure that the students are doing the assignment correctly. The instructor should point out errors, demonstrate the correct and/or efficient way of doing it.

The evaluation of assignments should include extensive comments, both positive and negative. If possible they should be explained and clarified with the student.

(G) Programmed Instruction

In programmed learning the concept or generalization to be mastered is reduced into small steps and is arranged sequentially from the simple to the complex or from the concrete to the abstract. The learner is able to progress on his own without having to slow down or speed up because of group norms. His responses are immediately reinforced; he knows at the end of each step whether he is right or wrong. While programmed learning has many advantages such as guiding the student, providing for practice, immediate evaluation and individualization, it is pre-determined activity and seldom fosters the development in the student of unique or creative (to him) solutions to the problems at hand. It is also difficult and time consuming to produce.

However, programmed learning has a definite place in the learning of specific concepts or procedures.

(H) Illustration

Is the use of charts, pictures, diagrams, etc., for creating a visual impact on the learner. Illustrations are particularly useful when machines and equipment cannot be brought into the classroom, when operations or processes are being explained or for describing something that cannot be seen by the trainee.

Instructional Behaviours

Instructional behaviours refers to the way in which an instructor interacts with his students during the process of learning. These behaviours include motivating students, questioning, structuring the learning process, interacting with students, posing problems and evaluating.

The role of the instructor is that of facilitating the learning process and consists of developing a commitment to the learning process, organizing and administering the activities of the learner and assessing (for diagnostic and evaluative purposes) the student's progress. While there are many ways to instruct, each of which may be successful, each successful teaching strategy contains the following elements (or instructional behaviours).

(A) MOTIVATING STUDENTS

Instilling a desire to learn. This is a continuous process which includes pointing out the relevance of what is to be learned, communicating expectations and ensuring that the learner receives satisfaction from the act of learning. Motivation, not aptitude, is the most significant factor in determining the percentage of students that succeed. Throughout, you must insist that the responsibility for learning belongs to the learner. Success is a great motivator. Organize the learning process to ensure success.

(B) ORGANIZATION OF THE LEARNING PROCESS

This is usually done before the class and includes organizing the content and learning activities, developing problems to illustrate and integrate the theory, ensuring that the equipment is in working order and ensuring that the student has an adequate background.

(1) Structuring content and learning activities. Prior to and during the instructional process, the instructor organizes the content and learning activities (known to unknown, simple to complex, concrete to abstract, theoretical to applied) so that the student will learn most effectively.

Classroom structuring - in one way or another every instructor structures what goes on in that classroom. Even the unstructured classroom imposes a structure within which the students learn. The structuring should be based on facilitating the achievement of the objectives and should include the creation of an environment that is socially and psychologically safe for defining roles and tasks, establishing ground rules, providing directions and outlining constraints such as time.

(2) Focusing on a problem. The instructor calls attention to a problem situation to which the student is invited to respond. Frequently it poses some dilemma, discrepancy or conflict that needs resolution. Questions should be posed in such a way as to stimulate their curiosity as opposed to exposing their ignorance.

(3) Facilitating and acquisition of data. Since the general objective is to develop decision-making processes and problem solving abilities, the instructor must make data accessible to the student as input that he can process. The instructor creates the environment that is responsive to the student ‘s quest for information.

(C) INTERACTION WITH STUDENTS

This includes the development of an environment conducive to learning, developing rapport and also includes the incidental-learning coming from the public display of the instructor’ s behaviour.

(1) Accepting

Basically the instructor is non-evaluative and non-judgmental and gives no clues through posture, gesture or word as to what is right or wrong, good or bad, better or worse. The intent is to provide a psychologically safe climate where a student can take risks, where he is given responsibility for making decisions and where he is encouraged to examine and compare his own data, values, ideas, criteria and feelings with those of others. Words such as “OK”, “All right” acknowledge a student’ s contribution but still encourage further thinking.

(2) Clarifying

To some extent clarifying behaviours are related to accepting behaviours in that they indicate the instructor ‘5 interest in what the student is saying. They go further in that they attempt to enable the instructor to understand more fully what the student is trying to say or do. It aids the instructor in diagnosing student strengths and weaknesses and it aids the student in developing more fully a certain idea, concept or understanding better how something is to be applied. Clarifying is a process of commitment where you often rephrase what a student has said, “I hear you saying...” or “What do you mean by...”. This is a most effective way of proving that you are listening and makes the student feel good about his participation. Clarifying is a way of building a students confidence and ego.

(3) Questioning Techniques

Questioning is one of the best ways of stimulating a student to think. However, care must be taken in selecting the right question. If you want a student to compare the operating expenses of two types of machines, you can not ask, “which machine is best?” You should ask them to compare the two machines against certain criteria.

(a) **Recall question** - is designed to draw out of the student the information, feelings, experiences that he has acquired in the past. Brings out data which can be processed at a higher level.

(b) **Processing question** - is designed to have the student draw some relationships of cause and effect -- to synthesize, analyze, compare or classify the data.

(c) **Application question** - which causes the student to predict, theorize or apply a principle in a new situation.

Keep them thinking by asking questions. Recall questions are simpler and require less thought. Application type questions force the learner to apply the concept or skill; learning is, therefore, much more effective. Remember to allow more time for the higher level questions.

(4) Silence

The instructor should tolerate periods of what seems to be lengthy silence. He says nothing, and he says nothing non-judgmentally. Instructor ‘ s silence is not a classroom control weapon; instead it is a time for students to do their own thinking, reflecting, generalizing. This behaviour helps maintain the appropriate role patterns for autonomous learning. When the instructor poses a problem and then remains silent, it helps the student further realize that the responsibility for the problem solution is his -- not the instructor ‘s.

(5) Modeling

The value of instructor behaviour as a model is not for the purpose of having students imitate certain types of desired behaviour, but rather for having instructor behaviours consistently reflect desired educational outcomes as a positive mediating influence.

Modeling tends to improve the student’s perceptions regarding the value of stated goals; for example, the way the instructor behaves when solving a classroom problem influences the way the student will approach his own problems. If listening is a valued outcome of instruction, then instructors who listen to students will do much to reduce feelings of confusion, frustration and hostility on their part. The latter may result when the student senses a discrepancy between what he is taught and what he perceives in the instructors behaviour. It is essential that the instructor be aware of the learning behaviour he is modeling so that it may reinforce the student ‘s behaviour when it is performed. If there is an inconsistency in the learning behaviour modeled and that which is reinforced, confusion and anxiety are probable. “Be neater,” scrawled on an assignment is an example of an inconsistent behaviour.

(D) PERCEIVING THE NEEDS OF INDIVIDUAL STUDENTS

This includes obtaining information on how well the student is doing, where and why he is having difficulty. This should then be used in prescribing remedial or corrective action.

(E) REMOVING DISTRACTIONS AND POTENTIAL FRUSTRATIONS

A teaching strategy consists of the many ways in which an instructor facilitates learning for a student. It includes planning of course, lessons and assignments, applying different methods of presenting information, and utilizing teaching skills and effective ways of interacting with students.

On-The-Job Training Methods

When presenting training on the job, there are three basic methods that can be used. They are the "one-on-one" method, the "training meeting" method and the "self-study" method. The best training programs will be a combination of at least two methods, using each to its maximum advantage.

(A) One-On-One Training

The most effective method of instructing skills is accomplished using this method. The trainer and the trainee work together as a team right on the job, doing the actual job.

When using the one-on-one method, the trainer should use the three step "tell him, show him, watch him" technique for each task to be taught.

(1) "Tell Him"

This is the first step of the one-on-one method. In this step, the trainer states clearly the objectives of the lesson and explains to the trainee what is about to occur. The trainer should satisfy himself that the trainee knows the necessary background theory to do the job properly, and that he is

aware of the safety aspects of the job and is familiar with potential hazards. This may require some instruction by the trainer, or may only require that the trainee be questioned to ensure that the necessary knowledge is present.

At this stage, it is also a good idea to relate this specific lesson to the overall operation so the trainee understands how the job fits in. This will tend to motivate the trainee to pay attention and learn.

During this step, the trainee should be encouraged to ask questions when he doesn't understand something, and the trainer should ask questions at appropriate times to ensure that the information is being understood. The key to the success of this step in the process is in your ability to communicate with other people. Regardless of how well your training program was developed, or how good it is, if you can't communicate the information then the whole thing is useless. Communication is the only way we have of transferring information and gaining understanding. As a supervisor, you spend up to 80% of your time communicating. As a trainer, you will spend 95% to 100% of you time communicating.

While providing on-the-job training for your workers, you have two responsibilities for communication. The first is that you must communicate the information to the trainee. The second is that you must ensure that the trainee understands. In order to accomplish both of these objectives, you must apply good communication skills. (See Appendix on the communication process.)

(2) "Show Him"

When the trainee knows the theory and safety aspects of the job, and understands the objectives of the lesson, the trainer should demonstrate the job.

During the demonstration, the trainer should explain what he is doing as he does it, and should ask and answer questions as required. In order to make the demonstration as effective as possible, here are a few techniques that you may find useful.

(a) Plan the Demonstration

When demonstrating a job to a trainee, make sure that you have all the tools and equipment that you will require, and make sure that everything is in good condition and working properly. Remember, nothing will stick in the mind of a trainee longer than a demonstration that doesn't work.

(b) Know How To Do The Job

It is important that you be able to do the job correctly the first time. If you make a mistake, the trainee will likely lose confidence in your ability as a trainer. What's worse, he will learn the job incorrectly and this may be difficult to change later on.

(c) Position the Trainee Properly

Whenever possible, the trainee should stand beside you while you are demonstrating a task. In this way, he can observe things from your point of view. If he is facing you while watching, then everything that you do right to left will appear opposite to him and vice-versa. Be sure the trainee can see and hear clearly.

(d) Demonstrate Short Segments At a Time

Since it will be difficult for a trainee to remember a long series of job steps, it is often wise to have him learn the job in short segments. Be sure to provide continuity between segments, so that when all the segments have been learned, the trainee can put them all together to do the total job.

(e) Use Modelling To Your Advantage

Most workers will model themselves after their trainers or supervisors, especially with respect to attitudes. It is therefore critically important that you display the attitudes towards work and safety that you expect your trainees to learn. You will have many problems if you adapt a "do as I say, not as I do" approach to your workers.

(f) Demonstrate Slowly, And Re-demonstrate As Necessary

The job demonstration is no time for the experienced worker to "show off" how fast he can do the job, or how to use short cuts. Give the trainee every opportunity to learn quickly by demonstrating slowly.

You should also be prepared to re-demonstrate the job a number of times until the trainee is confident that he can do it himself.

During the demonstration you should stress the correct and safe procedures, and ask questions to test understanding. When the demonstration is complete, a verbal summary of the job will help to reinforce the learning that has taken place.

(3) "Watch Him"

Following the job demonstration by the trainer, the trainee should immediately be allowed to try the job himself, under constant supervision. The role of the trainer during this step is to observe the trainee in action. Again, it is a good idea to observe from the point of view of the trainee.

During this practice session, the trainer will provide immediate positive reinforcement for steps that are carried out correctly, and will immediately correct mistakes as they occur. The trainer should also be willing to re-demonstrate segments of the job as necessary, if it appears that the trainee is running into trouble.

When possible, the trainee should be allowed to practice the job several times. But remember, "practice does not make perfect, only perfect practice makes perfect."

When the trainer is confident that the trainee can perform the job safely and with only occasional supervision, then the objectives for the lesson have probably been met. The trainee should then be ready to start doing this job, and to proceed to new training.

(B) The Training Meeting

The training meeting is probably the most effective way to teach the knowledge or theoretical parts of the job. Some of the advantages of training meetings are:

- The meeting can be held in a location away from the actual work site, thus eliminating many distractions for the learner.
- Trainees have the opportunity to share the views and ideas of the group through discussion.
- Learning resources can be kept in one location, and accessed as required.
- The trainer has total control of the learning environment, and can choose methods most appropriate to the subject being presented.
- Trainees have an opportunity to meet and work with each other in a different atmosphere than on the job.
- Trainees can frequently analyze problems and come up with solutions themselves. Nothing is as gratifying or lasting as having come up with the answer yourself.

There are many types of meetings that could fall under the general heading of training meetings. These include instructional meetings, safety meetings, work preview meetings and tailgate meetings. In this course, we are primarily concerned with instructional meetings, but we will mention a couple of other types of meetings because of their impact on the application of safe work

procedures. The techniques discussed for instructional meetings will apply to most other types of meetings.

(1) Instructional Meetings

Instructional meetings are used when there is some specific information that must be taught. These are the typical training sessions. There are a number of ways of ensuring the success of an instructional meeting.

(a) Each training session should cover only one or two subjects. The meetings should be kept short and interesting. It is better to hold a series of short sessions than one long one.

(b) Keep the size of the group small; 4 to 6 people would be ideal. This will ensure that interaction will take place while still allowing all participants to have a share in the discussion.

(c) Always plan what you will be presenting in the meeting. This will require the writing of an agenda or lesson plan. Your lesson plan should include the topic to be discussed, the objective of the lesson, the instructional method you will use, the key points you wish to bring out, the resource materials you will use and the timing of the lesson.

(d) Choose an instructional method that will allow you to present the required material while keeping the learners as actively involved as possible. Instructional methods include lecture, discussion, illustration, demonstration and practice.

(e) Be sure the learners know the objectives of the training session before the training starts.

(f) Provide plenty of opportunity for questions and feedback from the group.

(g) Have some questions prepared in advance in case discussion does not start naturally. At the start, questions should be directed to the group. Then,

when everyone starts relaxing a bit, you can direct them to individuals as necessary.

(h) Provide positive feedback by spotlighting important contributions from the group. Avoid the use of negative feedback.

(i) Use audio-visual aids and other resource materials to the fullest extent possible.

(j) Summarize the main points of the lesson at the end so that the learners' memory is refreshed.

(2) Work Preview Meetings

Work preview meetings are short meetings that are held just before a crew goes onto shift. The purpose of the meeting is to preview the work that will be done on that shift, to review job procedures, safety procedures and potential hazards, and to allocate job assignments if necessary.

Preview meetings are called at the discretion of the supervisor or foreman when he feels they are necessary. Job procedures are reviewed by the foreman, or the workers can be asked to recite the procedures that they will follow. These meetings are very useful when a job has to be done which hasn't been done for a while, or when job conditions have changed since the last time the crew worked.

Commercial pilots are required to review safety and emergency procedures before every flight.

(3) Tailgate Meetings

Tailgate meetings are short meetings, which are called at any time to discuss a specific topic. They got this name because they are often held on the tailgate of a pickup truck.

The purpose of the tailgate meeting is to get the crew together right on the job site to discuss a hazard, a procedure or a change in the work plan. Tailgate meetings are usually related to safety, although the same technique can be used to discuss any aspect of the job.

The supervisor should call a tailgate meeting whenever a hazard is identified and an unsafe act or procedure is observed or there is a significant change in the work being done. The meeting should be to discuss only one topic, and it should last only 5 to 10 minutes.

(C) Self-Study

The self-study method requires that the trainee be provided with resource materials, and that he study these materials by himself. Under the proper circumstances, this method is effective for teaching the knowledge or theory parts of the job. It is not an effective method in the teaching of skills.

If this method is used, the resource materials must be of a high quality, developed specifically for this purpose. The trainer must be available to answer questions and provide guidance when required, and must ensure that the material has been learned before the trainee moves into the skill development phase of his training.

The advantages of this method are:

- The trainee can progress at his own pace.
- The full time involvement of the trainer is not required.
- The trainee can study on his own time.
- Companies who have only one or two trainees at a time can use this method.

There are many companies that have established learning resource libraries, so that trainees can supplement their studies by looking at various resources at their own convenience.

Computers are now becoming commonly used as tools to assist in the instructional process or to actually provide the content material to be learned. Three broad categories of computer applications in training are:

(1) Computer Managed Learning (CML)

(2) Computer Assisted Instruction (CAI)

(3) Simulators

(1) Computer Managed Learning (CML)

CML systems are used to help manage the instructional/learning process, and do not provide any of the actual instruction. These systems will issue tests to students from testbanks stored in the computers memory, will monitor student progress through a course, will help diagnose learning problems and will maintain student records and other information related to the training course or program. Generally, they make the job of the instructor or trainer much easier.

Typically, learners will complete a unit of instruction by studying self-instructional resource materials; then they will request a test on that unit from the computer. Student responses are fed back into the computer and the test is graded: The computer provides the student with immediate feedback on the results of the test, and directs the student as to what to do next. Depending on the degree of success in meeting the desired objectives, the student may have to go back and study more, then write another test on the same unit, or he may be allowed to proceed to the next unit of instruction.

The real strength of CML systems is that they provide the trainer with immediate feedback on the progress of each student through the training program, and help

to identify areas where individual learners are having difficulty achieving the desired objectives.

(2) Computer Assisted Instruction (CAl)

CAl systems use the computer as a vehicle by which the information to be learned is presented to the student. The text of the lessons, diagrams, illustrations, etc. are stored in the computer memory or on disc, and are presented on the monitor a page at a time, under the control of the student. The computer is, in effect, replacing the printed page and/or the instructor.

By combining computers with other technologies, such as a laser disc and television, for example, very elaborate self-paced, self-instructional programmed learning systems can be designed. Although the initial development of these system learning packages is expensive and time consuming, they do provide for the efficient delivery of training on an on-going basis, so long as the information being presented remains current and relevant.

(3) Simulators

Simulators are computers that are programmed to act like a particular piece of equipment or an entire system. They are usually designed to look like the equipment they are simulating as well, although sometimes on a smaller scale.

Simulators are becoming more popular as a training tool in many industries, and are finding useful applications in such areas as pilot training, process operator training and oilwell drilling and servicing. They are best applied in training for job situations where there are changing variables, and the trainee/worker is expected to make adjustments in response to those changing variables.

The major advantage of simulators is that they allow the trainee to experience conditions very similar to, or the same as the "real-life" conditions that will be experienced on the job, but in a safe environment. That is, the learner can make a mistake without the risk of shutting down a process, damaging a piece of

equipment, crashing an airplane or having an accident. They also allow the trainer to set-up and simulate typical or unusual situations which would be dangerous, or in some cases, impossible to set-up on the actual equipment or process. This allows the trainee to experience and respond to an emergency situation, for example, which would otherwise be impossible to arrange just for training purposes.

The computer in the simulator also provides the trainer with information on the performance of the learner, so that learning problems can be diagnosed and progress evaluated.

When using any of the self-study instructional methods, a trainer, supervisor or some other knowledge persons should be available to "tutor" the trainee when he is experiencing difficulties.

(D) The Ideal Training Method

The most effective on-the-job training method would be a combination of the instructional training meeting or the self-study method together with the one-on-one method.

The trainee would first learn the theory and safety requirements of the task or job, and would then have an immediate opportunity to apply the theory by learning the skills of the job.

When planning training, the theory and practical application should be taught as close together as possible, with the theory preferably first. It does no good at all to teach the theory for a job six months or a year before the worker will actually do the job. By the same token, it is very dangerous to allow a worker to do a job before he has the theory and safety knowledge necessary to ensure that he can do it safely and correctly.