Learning Principles
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Key Concepts

* **Trainer vs. trainee-centered learning.** A trainer must understand that trainees differ from one another in maturity, knowledge, motivation, responsibility, and learning skills. The learning experience must be carefully chosen to suit the trainee.

* **Learning principles.** A trainer must apply in practical ways the principles basic to effective learning.

  Although this discussion favors a practical "how-to" approach, take a little time to look at some very important learning concepts. These are the foundations of any learning experience.

  In a learning situation, some learners behave differently from others. Some prefer to be dependent, making no decisions and relying entirely on the trainer. Others become motivated when they perceive that the learning will help them to deal with current problems. Usually, they want to be consulted to some extent about what they are going to learn and how they are going to learn it as well. However, the degree to which they may wish to accept responsibility for their own learning can vary.

**Trainer- or Trainee-Centered Learning**

In any training program or learning experience there are four major variables. These are:

a. the process
b. the content
c. the trainer (teacher or instructor)
d. the trainee (student)

**The Process**

The method that is used to give the trainees the learning is called the process. Some processes rely on the trainer to make the decisions on what should be learned and how it should be learned. These are called trainer-centered learning models. Other learning calls for the student or trainee to make decisions about what is learned. Contract learning, action learning, and the self-teaching action group models are examples of trainee-centered learning approaches as they give the trainee complete decision-making responsibility. Models such as the discussion, the case study, role play, computer-based learning, programmed instruction and the algorithm are partly trainee- and partly trainer-centered.
The question that needs to be asked, of course, is "when is it appropriate to use each model?" To answer this, we must examine the other three variables.

The Content

The content of the training course is the knowledge and/or skills the trainees are to learn. The content can be viewed on a continuum of simple to complex. Simple knowledge is where there is only one possible correct answer. For example, the equal employment opportunity legislation specifically prohibits discrimination on the grounds of race or sex. There is no other correct way to interpret the law. Similarly, a simple skill is one in which there is only one correct way to carry out the skill. At the other end of the scale we have complex knowledge where there can be many possible correct answers. If we look for the best way to manage staff in an organization, for example, contingency theories indicate that it will depend on the situation. When someone designs a computer program, there may be several possible paths that could be used to achieve the desired result. These problems require complex knowledge and skills as there are multi-answer solutions.

The first variable to examine in deciding whether to use the trainer- or trainee-centered models is the simplicity or complexity of the content of the training course. The more complex the content, the more effective it is to use the trainee-centered models. However, it is more efficient to use trainer-centered learning with simple content. Whether it is more effective will depend on the other two variables.

The Trainer

The major problem with the trainee-centered models is that the trainer needs to be highly skilled to use them. These higher level skills can only be learned through experience. The basic skills on which the higher level skills are built are incorporated in the trainer-centered learning models and these need to be practiced until they become a natural reaction. The trainer should not move on to the trainee-centered learning approaches until he or she is competent in the basic instructional models.

The Trainee

The trainee is undoubtedly the most important variable when considering which model to use. To examine this variable we will use a concept called learner maturity. Specifically, we need to consider the following characteristics of the trainee:

1. Content base. Strong proponents of adult learning would claim that the trainee does not need any knowledge or skill in the subject area to be learned. In theory this may be true but it certainly makes the learning experience significantly more difficult for the trainee. If the trainee has very high levels of the next element, motivation, then he or she may overcome this
difficulty. However, many learners feel that when they have no previous experience in a particular subject, it is better for others to structure the learning steps for them.

2. *Motivation.* The trainee should have an interest in and a certain level of need to acquire the knowledge or skill. The higher this level of need and interest, the more likely it is that the trainee will benefit from trainee-centered learning.

3. *Responsibility.* The trainee has to accept responsibility for his or her own learning before the trainee-centered learning models can be used. The trainee who prefers to rely on someone else to structure the experience and take responsibility for any failure would be happier learning by the trainer-centered learning models.

4. *Learning skills.* The ability to decide what end result needs to be achieved, what should be learned so the end result can be achieved, how it should be learned, and what evidence can be presented to prove learning as a skill. Unfortunately, in most of our educational experiences throughout our life, all these decisions are made for us. This means that, often, we have not been able to acquire these skills that are essential if we are to take responsibility for our own learning. So, not only does the trainer need higher level skills to be able to manage trainee-centered learning but so does the trainee.

When deciding whether to use more trainer- or more trainee-centered learning processes, we need to examine the variable of the trainee on four levels just discussed -- content base, motivation, willingness to take responsibility for his or her own learning, and level of learning skills. The higher these are the more likely the trainee can cope with trainee-centered learning.

**The Decision**

The decision to use trainer- or trainee-centered learning processes depends on three variables:

1. The content -- whether it is simple or complex;
2. The trainer -- the levels of skill the trainer has;
3. The trainee's level of learner maturity.

Once these variables have been analyzed, the decision can be made on which model on the continuum to use.

<table>
<thead>
<tr>
<th>Trainer-Centered</th>
<th>Trainee-Centered</th>
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<tbody>
<tr>
<td>* Theory</td>
<td>* Case study</td>
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<tr>
<td>* Skill</td>
<td>* Role Play</td>
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<td>* Lecture</td>
<td>* Computer-Based Learning</td>
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<td>* The Algorithm</td>
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<td>* Programmed Learning</td>
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<td>* STAGs</td>
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<td>* Contract Learning</td>
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<td>* Action Learning</td>
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Individual Learning Principles

Now that we have described the learning processes that can be used, let's explore some of the learning principles that you use to ensure that the models have maximum effect. The principles are universal and have been shown to be effective when used in both trainer- and trainee-centered models.

1. Whole or part learning
2. Spaced learning
3. Active learning
4. Feedback
5. Overlearning
6. Reinforcement
7. Primacy and recency
8. Meaningful material
9. Multiple-sense learning
10. Transfer of learning

1. Whole or Part Learning

After defining training objectives, you must decide whether to present the knowledge or skill in logical, easily acceptable parts or as a unified whole. Although in making the decision you should take into account the abilities of the trainees, the decision rests largely with the subject matter itself.

You will almost always find that the subject matter can be divided into parts or segments. Frequently, the trainees will prefer to deal with a series of separate segments rather than a large unified block of material. When dividing the material into segments, you should ensure that:

1. **The segments are not too large.** Remember, although you are most probably very conversant with the material, this is new ground for the trainee. What you consider to be reasonably small may be perceived as very large by the trainee. So carefully examine the size of each part or segment from the viewpoint of the trainee.

2. **The segments have a logical sequence.** Present each segment as a part of this sequence. The trainees can then relate one part or segment to the next and so enhance their recall of the total knowledge or skill.

3. **Work from the known to the unknown.** Cover the first part of the following sequence until the trainees demonstrate by their behavior that the information or skill has been accepted. Then, and only then, proceed to the next part in the sequence. This is called "known to unknown" and gives the trainer a firm foundation from which to proceed to the new information.
Sometimes, however, we find that the parts or segments are highly dependent on each other. Take, for example, learning how to ride a bicycle. You can divide this learning into at least three parts: balancing, steering, and pedaling. We would find it difficult to learn these parts independently because each part is related to the others. Steering depends on balancing and how hard the pedals are pushed and balancing depends on steering and pedaling. In learning situations such as this, the skill or knowledge would have to be taught as a whole. Such situations are reasonably uncommon, however, and most training models are based on the concept of part learning.

A final word of warning is appropriate. Just as it is possible to demotivate workers by making their jobs on a production line too simple, so it is possible to demotivate learners by making the segments of a session too simple. So when you have divided material into segments based on logic and "known to unknown," check that:

1. The segments are not so large that your particular group of trainees cannot handle them.
2. The segments are not so small that your particular group of trainees becomes demotivated.

2. Spaced Learning

Learning that is spaced at reasonable intervals is usually superior to massed (or crammed) learning if you want long-term retention of the material. This principle derives from the phenomenon of "incubation." The brain needs time to assemble one group of facts before accepting the next group. In addition, spaced learning creates regular review and revision sessions, which slow the rate at which trainees forget the material.

3. Active Learning

If trainees are actively involved in the learning process (instead of listening passively), they will learn more effectively and become self-motivated. Active learning is often described as "learning by doing." Provide ample opportunities, both in the sessions and throughout the program, for the trainees to actively practice the skills and knowledge they are learning.

4. Feedback

This principle has two aspects. First, the trainees need feedback on how they are progressing. Feedback can be simple or not so simple, from explaining why an answer is correct or incorrect to commenting on a trainee's performance of an activity or discussing the results of an examination. No matter how simple or complicated the feedback, provide it as soon as possible. The more immediate the feedback, the greater the value.
Second you need feedback on your own performance as a trainer:

* Is information being received and understood?
* Do they have any doubts or questions?
* Is any trainee not paying attention?
* Has the session become boring?
* Should I build more active learning into the session?

5. Overlearning

Over time, people gradually forget what they have learned. The time required to forget varies from learner to learner and from topic to topic, but the general form of the curve is always the same.

If you apply overlearning, you can alter the curve significantly. Stated simply, overlearning means learning until one has perfect recall -- and then learning it some more. The result is a marked decrease in the rate of forgetting.

In other words, forgetting is significantly reduced by frequently attempting to recall learned material. Note that repetition by the trainer, while having some value, does not maximize recall. To achieve maximum retention, you must actively involve the trainee in the repetition.

6. Reinforcement

Learning that is rewarded is much more likely to be retained. This is quite evident in everyday life, but it is such a basic idea that many trainers overlook it when conducting a session. A simple "Yes, that's right" or recognition for attempting to contribute can mean a great deal to a trainee.

We would like to emphasize the fact that punishment only teaches the trainee that his or her response was wrong. Punishment gives no guidelines about which responses would have been correct. Reinforcement, on the other hand, specifically confirms the response. (And that's what training is all about!)

7. Meaningful Material

When presented with new information, we unconsciously ask two questions:

* Is this information valid when I compare it with experiences I've had in the past?
* Will this information be useful to me in the immediate future?

The first question emphasizes the notion of moving from the "known to the unknown" as well as the fact that we tend to remember material related to what we
already know. That is why you must assess the trainee's current level of learning when you plan a training program. The second question emphasizes the fact that the trainees want to know that what they are about to learn will be useful to them in the near future.

In this way, meaningful material links the past and the future and promotes two beneficial effects:

* Security when trainees move from the known to the unknown.
* Motivation—because the information will be useful in the near future.

8. Primacy and Recency

Given any sequence of facts, trainees will tend to remember what they heard first and last. What they heard in the middle they often forget. Therefore, emphasize and reenforce facts that are in the middle. Let's try a remembering quiz. Look at the follow list for 30 seconds. The look away and write down every word in it that you can remember.

<table>
<thead>
<tr>
<th>Soap</th>
<th>Line</th>
<th>Clock</th>
<th>String</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bird</td>
<td>Car</td>
<td>Folder</td>
<td>Hair</td>
</tr>
<tr>
<td>Rug</td>
<td>Paper</td>
<td>Mat</td>
<td>Cage</td>
</tr>
<tr>
<td>Pocket</td>
<td>Salt</td>
<td>Wire</td>
<td>Glass</td>
</tr>
<tr>
<td>Door</td>
<td>Chair</td>
<td>Stove</td>
<td>Boot</td>
</tr>
<tr>
<td>Flower</td>
<td>Dog</td>
<td>Pillow</td>
<td>Light</td>
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<tr>
<td>Desk</td>
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</tbody>
</table>

You have probably remembered words that appear at the start and end of the list better than you remembered the words that appear in the middle of the list.

One explanation for primacy and recency is that material seen or heard early will be remembered better because it does not have to compete with material preceding it. Material seen or heard late does not have to compete with material following it. Material in the middle has to compete with both preceding and following material and is therefore remembered less well.

9. Multiple-Sense Learning

Authorities suggest that of the information a person takes in, approximately 80 percent is obtained through sight, 11 percent by hearing, and 9 percent by the other senses combined. Therefore, to achieve maximum input to the trainees, you must use
two or more of the senses. Usually you can use sight and hearing, but do not ignore the other senses. Touch may often be the crucial sense. For most learning, however, sight provides most information to trainees, and we consequently emphasize visual aids.

In addition, if the trainees’ sense of sight is not used for learning purposes, it isn't just turned off. It frequently becomes an active source of distraction for the trainee.

10. Transfer of Learning

The amount of learning that trainees transfer from the training room to the workplace depends, mainly, on two variables:

1. The degree of similarity between what was learned in the training program (and this includes how it was presented) and what occurs at the workplace.
   
   (For example, can the trainee apply his or her new knowledge and skills directly to the job without having to modify the training in some way?)

2. How easily the trainees can integrate into the work environment the skills or knowledge gained in the training program. (For example, will the work system or the supervisor allow or encourage the use of new skills?)

The presence of these two variables stresses the importance of referring continually to the workplace when looking for ideas on how to present information or skills and when designing activities and tests for the training session.