

Although this story may not be entirely accurate, it does illustrate the process of retroactive inhibition in which new learning may interfere with the recall of old learning.

*Proactive Inhibition:* **Proactive inhibition** is a companion explanation to retroactive inhibition. It holds that old learning interferes with the retention of new learning. Both proactive and retroactive inhibition become particularly troublesome when the material being learned is similar to old learning. The greater the similarity, the more likely that interference will occur. Both processes can be illustrated by the example of an individual who is learning a second computer language. If the second computer language is similar to the first one, it is easy for the learning of the first language to interfere with the learning of the second. Many students experience extreme frustration when learning a second, similar computer language because a simple mistake, like misplacing a comma, can prevent a computer program from running.


*Motivated Forgetting:* Occasionally, **motivated forgetting** occurs because the learner wants to forget the information. There are at least two reasons why learners might want to forget certain information. First, they may not want to remember information that is threatening to their self-esteem and damaging to their egos. This process is called repression. Another reason is because the information is no longer useful. Some flight attendants can take orders for drinks from many passengers and remember which passengers ordered which drinks. But once the attendants have served the drinks, they quickly forget the order information, since there is no further need to remember it. This tendency to remember unfinished tasks and to forget tasks that are finished was recognized many years ago and is called the *Zeigarnik effect*.<sup>43</sup>

## Learning

### Learning Styles


People differ in their preferred style of leaning. As shown in Exhibit 8, some people are visual learners and learn best by seeing models, videos, and diagrams; some are auditory learners

**Exhibit 8: Three Learning Styles**




**Visual Learners**—learn best through seeing

- Overhead transparencies
- Videos
- Diagrams



**Auditory Learners**—learn best through hearing

- Lectures
- Discussions
- Audio tapes



**Kinesthetic Learners**—learn best through touching

- Handling objects
- Constructing models

who learn best by verbal discussions and explanations; and some are kinesthetic learners who learn best by handling objects, manipulating parts, or constructing models.

### Levels of Learning

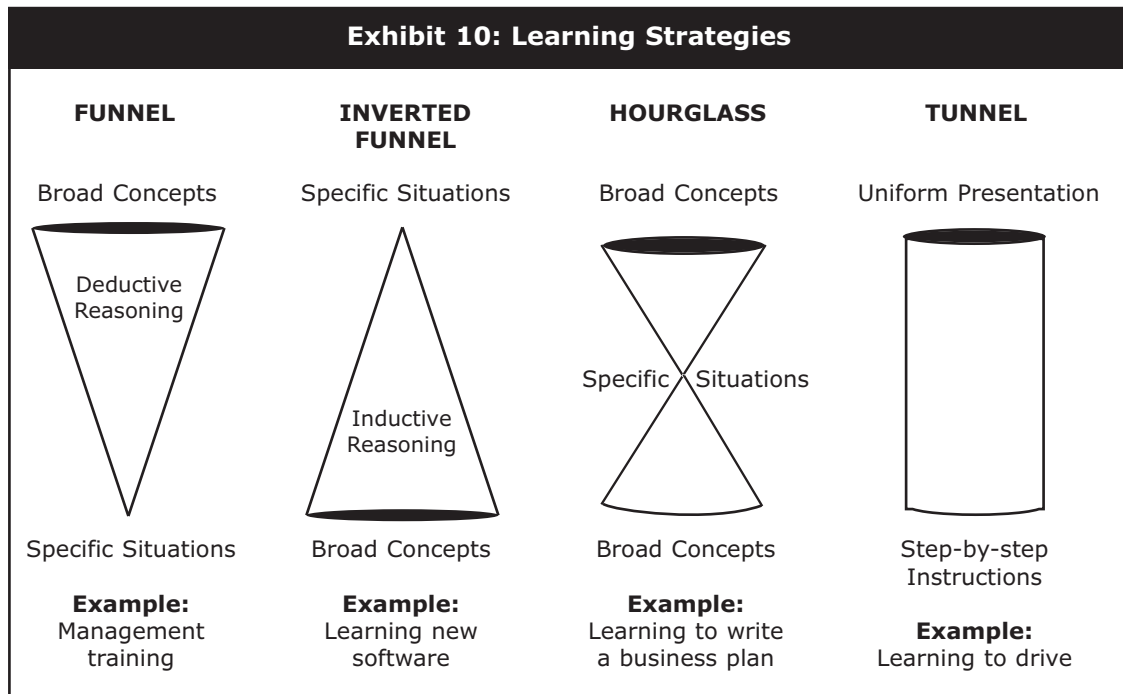
Learning can occur at different levels. Knowing facts about a country is not the same as being able to explain how cultural differences will impact society. Six levels of learning have been proposed by Bloom in a taxonomy of cognitive learning: knowledge, comprehension, application, analysis, synthesis, and evaluation. This taxonomy represents a hierarchy of increasingly sophisticated levels of cognitive learning.<sup>44</sup> An illustration of the levels of learning is shown in Exhibit 9.

- | <b>Exhibit 9: Illustration of Levels of Learning</b>          |   |
|---|---|
| <b>Filler operator position putting juice into containers</b> |   |
| 1.  | <p><i>Knowledge:</i> At the knowledge level, the learner can recall specific facts. For example, a person may know that the average Japanese high school student spends more time in school and doing homework than the average American student.</p> <p><i>Comprehension:</i> At the comprehension level, the learner is able to grasp the significance of the facts and perceive their importance. For example, a learner could explain why Japanese high school students score so well on college entrance exams.</p> <p><i>Application:</i> At the application level, the learner is able to apply the information to practical problems. For example, the learner who knows that Japanese students possess greater technical knowledge would be able to develop a different interview schedule for hiring Japanese job applicants.</p> |
| 2.  | <p><i>Knowledge</i>—filler operator is able to name the parts of the machine.</p> <p><i>Comprehension</i>—operator can explain how machine works.</p> <p><i>Application</i>—operator can run machine to produce container of juice.</p> <p><i>Analysis</i>—operator can perform preventive maintenance or determine how to operate the machine more efficiently.</p> <p><i>Synthesis</i>—operator can effectively train other employees.</p> <p><i>Evaluation</i>—operator can choose between fillers to select the one that produces the best container of juice at the best price.</p>  |
| 3.  |   |
| 4.  | <p><i>Analysis:</i> At the analysis level, the learner is capable of understanding why the phenomena exists. For example, the learner would be able to explain how the Japanese educational system prepares students, beginning in grade school and continuing through high school and in special cram courses, to perform well on college entrance exams.</p>  |
| 5.  | <p><i>Synthesis:</i> At the synthesis level, the learner is capable of drawing from related sources of information to gain a broad understanding and reach conclusions. For example, the learner would be able to explain how the Japanese culture and family expectations contribute to the motivation and discipline that propel Japanese students in their academic studies.</p>   |
| 6.  | <p><i>Evaluation:</i> At the evaluation level of learning, the learner is capable of making judgements of value and worth. For example, the learner would be able to assess whether the pressure to be admitted into the premier Japanese universities</p>  |

contributes to a reduction in creative thinking and, if so, if it is justified by the superior academic accomplishment.

### Learning Strategies

Training can use different combinations of inductive and deductive reasoning to help learners learn, as summarized in Exhibit 10. The funnel approach applies general theories to specific situations using deductive reasoning, while the inverted funnel does just the opposite. The hourglass uses a combination of deductive reasoning at first, followed by inductive reasoning to discover new principles. The tunnel strategy involves the systematic presentation of information that must be committed to memory.



### Kinds of Learning

There are four major kinds of learning: motor response learning, rote learning, idea learning, and value internalization. The processes of learning differ for each kind of learning.

*Motor Response Learning:* **Motor responses** are physical acts involving various muscle groups. Some motor responses are simple, such as turning a knob, pushing a button, or pulling a lever. Other motor responses are complex, such as playing basketball, playing an organ, or operating heavy equipment. Motor-response learning frequently involves complex coordination, including finger dexterity, eye-hand coordination, and multi-limb coordination.

Since motor responses depend largely on sensory control, the most important aspect in learning them is actual performance of the activity. For example, the best way to teach a child to ride a bicycle is by putting her on one, helping her develop a feel for pedaling and maintaining balance, and encouraging her to practice. Having the child watch other cyclists or letting her ride double with someone else can provide valuable imitative learning. But long

lectures or discussions, even if they include diagrams and pictures, will do very little to help a child learn to ride a bicycle.

*Rote Learning:* **Rote learning** refers to memorizing arbitrary associations between words, symbols, objects, or events. Examples of rote learning include memorizing a poem, memorizing a sales presentation, learning the words to a song, and learning a new language.

Some people have an amazing ability to memorize large amounts of information and retain it. These individuals often take advantage of memory devices that help people remember large amounts of new information. For example, the word HOMES is a useful mnemonic for remembering the Great Lakes. With the help of a memory device, some individuals can walk into a crowded room, be introduced to dozens of new people, and remember each individual's name. Most memory devices are based on some form of association whereby an individual learns new material by associating it with material that already has been learned. To help them remember the names of new acquaintances, many people envision the new person with an old acquaintance who has the same first name.

*Learning Ideas:* The process involved in learning ideas is not open to observation and, therefore, is difficult to describe. The learner may be confronted with a complex stimulus environment and expected to make a response. Between the stimulus and the response, however, a complex, nonobservable process of thinking must occur. This thinking process has been referred to as an intermediary response, or a mediating response. The word mediating comes from the Latin word *medius*, which means "middle," referring to the processes between the stimulus and the response.

The process of learning ideas appears to depend on the development of symbols and associations within an individual's frame of reference. Much human learning appears to be a consequence of perceiving the total situation of stimuli and responses and of being able to organize them into meaningful patterns, mental images, and symbols.

*Value Internalization:* The process of acquiring personal values involves more than simply learning new information. For example, employees know that stealing merchandise or money is dishonest, but some do it anyway. If confronted with the evidence and asked why they did it, they may offer excuses, but they will also admit that they know stealing is dishonest and they should not have done it. The problem is not that they have failed to learn or comprehend the right behavior.

How does cognitive information about proper standards of conduct become internalized as a personal moral value? Numerous studies have examined the **value internalization** process.<sup>45</sup> Moral behaviors are actions considered intrinsically desirable, valued, or good because of their contribution to society. Most of the research on moral development has focused on four moral behaviors: aggression, honesty, altruism, and the work ethic.

Our knowledge of moral development has been greatly advanced by the work of Lawrence Kohlberg, who identified six stages of moral reasoning that he believed people use to decide right from wrong.<sup>46</sup> He focused on cognition, or the thinking process, and proposed a staircase model which showed that people advance in very predictable ways from lower levels of moral reasoning to higher levels.

Kohlberg's *cognitive developmental stage theory* contains three major levels of moral reasoning: the pre-conventional, the conventional, and the post-conventional or principled level. Each level has two stages for a total of six stages. Kohlberg believed that the development of character occurs in sequential age-related stages, with young children functioning primarily at the pre-conventional level and the majority of adults at the conventional level. Only a small percentage of people use principled reasoning, and even they use it only part of the time.

At the pre-conventional level, a person's motives are essentially egoistic—right and wrong are defined by authority figures, and people are obedient because they want to avoid punishment or to be rewarded. At the conventional level, a person's motives are to conform to social norms or the standards of highly-respected people. At the principled level, right and wrong are based on universal moral principles, and people are committed to follow them based on a sense of moral duty.

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### **Test Your Knowledge**

1. Can you explain classical conditioning, operant conditioning, and social cognitive theory?
2. Can you define andragogy and list the principles of andragogy?
3. Can you explain transfer of training?
4. Can you describe the various types of learning curves and explain their significance?
5. Can you list and explain the levels of learning?