

Knowledge of Results

In some simple skills, learners can discover their own errors quite easily. In other cases, such as learning complex aircraft maintenance skills, flight maneuvers, or flight crew duties, mistakes are not always apparent. A learner may know that something is wrong, but not know how to correct it. In any case, the instructor provides a helpful and often critical function in making certain that the learners are aware of their progress. It is perhaps as important for learners to know when they are right as when they are wrong. They should be told as soon after the performance as possible, and should not be allowed to practice mistakes. It is more difficult to unlearn a mistake, and then learn the skill correctly, than to learn correctly in the first place. One way to make learners aware of their progress is to repeat a demonstration or example and to show them the standards their performance should ultimately meet.

How to Develop Skills

Theories about how a skill evolves from the awkward and deliberate performance associated with the cognitive stage to the smooth and steady-handed performance of the automatic response stage have one thing in common: progress appears to depend on repeated practice. Making progress toward automating a skill seems to be largely a matter of performing the skill over and over again. In skill learning, the first trials are slow and coordination is lacking. Mistakes are frequent but each trial provides clues for improvement in subsequent trials. The learner modifies different aspects of the skill such as how to hold the yoke or how to weld.

How long does it take to become proficient at a skill? Studies of skill learning have demonstrated that progress tends to follow what is known as a power law of practice. This law simply states that the speed of performance of a task improves as a power of the number of times that the task is performed. The logarithm of the reaction time for a particular task decreases linearly with the logarithm of the number of practice trials taken. Qualitatively, the law simply says that practice improves performance.

The graph in *Figure 3-17* shows how the power law of practice relates the time required to perform a skill to the number of times the skill has been practiced. While it is impossible to predict how many practice trials a learner will require to develop a skill to maturity, the general shape of the power law of practice offers some clues. Learning progress proceeds at a fast pace in the beginning (when there is ample room for improvement) and tends to slow down as performance becomes more skilled. In later stages of learning, improvement is more gradual. Once the curve levels off, it may stay level for a significant period of time. Further improvement may even seem unlikely. This is called a learning plateau.

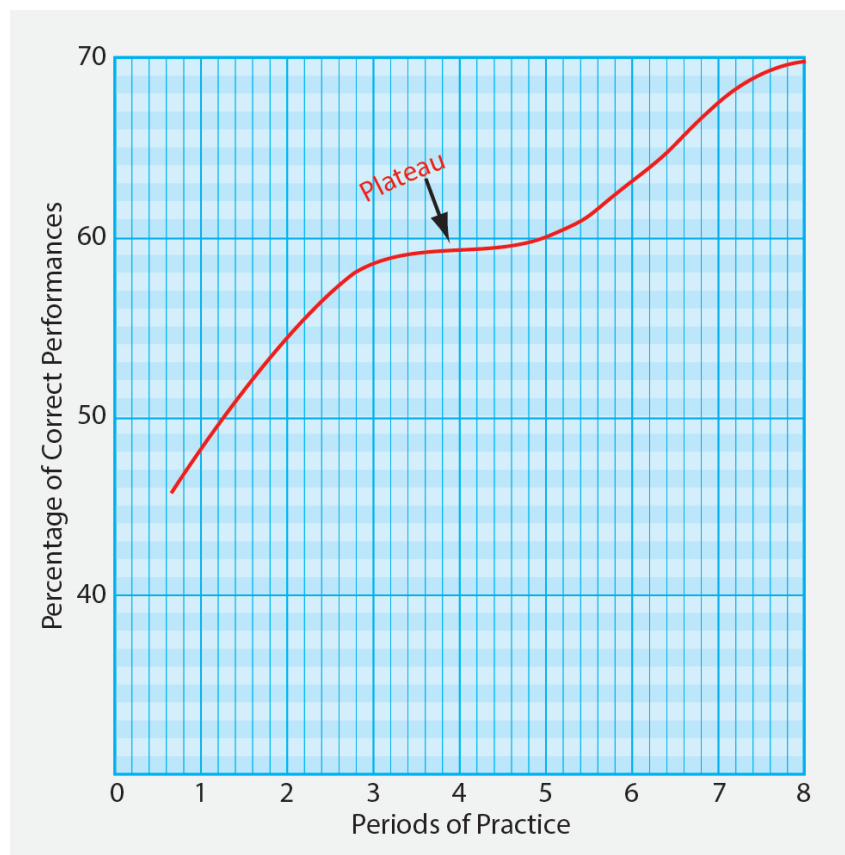


Figure 3-17. Learners will probably experience a learning plateau at some point in their training.