Teaching Psychomotor Skills in the Fire Service

By
Steven W. Edwards, Ph.D.
Oklahoma State University & Ingalls OK FD

INTRODUCTION

Most of the principles of teaching and learning that we’ve all been taught in the fire service come from the classroom setting. They are relevant for cognitive learning, but not necessarily for learning psychomotor skills. There is another entire body of teaching and learning principles that are unique to psychomotor skills – the “hands on” skills that are so fundamental to firefighting. These principles come from an academic discipline known as Motor Learning. Most of these principles and practices were developed with sports skill learning in mind, but they are directly applicable to other disciplines including the fire service. Some of these ideas are presented below, but there are many more fundamental ideas that could be presented.

THE STAGES OF MOTOR SKILL LEARNING

Motor skill learning is defined as “a set of internal processes, associated with practice or experience, leading to relatively permanent changes in skilled movement behavior.” We know that, after exposure to a teaching and learning environment, learners change in a relatively permanent way so that they acquire the ability to faithfully reproduce certain movements when they so choose. This acquisition process occurs in well-defined steps or stages.

The first stage is the Cognitive Stage. Sometimes called the verbal-motor stage, this is the initial point at which a learner makes his/her first attempts at producing the desired movement. This stage is very brief since most learners can make a successful attempt after only a few trials. Once the learner “gets the idea,” this stage ends. As instructors, we use several teaching strategies to assist learners at this stage. We use verbal explanations and descriptions of the movement in addition to live demonstrations of the movement to help the learner acquire the desired skill. The verbal explanations should match cue words and phrases to key parts of the skill. The person who demonstrates the skill can be almost anyone who can perform skill correctly, but the demonstration must display one or more of the essential features of the skill. The instructor should check to see that the learners pay attention during the explanation and demonstration. Remember that “a picture is worth a thousand words” so keep the explanations short and brief.

The second stage of skill learning is the Associative Stage. At this point the learner practices the newly acquired skill with the intent of achieving accurate and consistent performance. He/she is literally pulling together the various parts of the skill. As instructors, we use various teaching methods and styles to assist the learner. Sometimes learners work alone and at other times learners work in small groups with the goal of getting better and better at performing the skill. The main role of the instructor at this stage is to provide feedback to the learner about his/her progress. Details about how to use feedback appear below. As the learner advances he/she learns to eliminate extraneous movements and minimize the errors associated with the movement.

The third and last stage of motor skill learning is the Autonomous Stage. The goal of this stage is to performed the skill perfectly every time, that is, reach a maximal level of proficiency. As instructors, we encourage our learners to, “practice, practice, practice” in order to maintain their sharpness. In essence, this stage never ends. We must always keeping practicing our skills in order to maintain a high level of proficiency.
Feedback is defined as “the information students receive about their performance.” Without feedback, learning is practically nonexistent so, as instructors, it is our job to provide feedback to learners in an attempt to assist them with skill acquisition. The feedback serves three main functions: motivation, reinforcement and error correction.

Feedback can be used to motivate learners and it is particularly important for learners who might be struggling to acquire a given skill. Motivational feedback is designed to encourage the learner towards specific, task-related goals. It is often directed that the person’s effort with the intent of encouraging the learner to persist in the skill acquisition process. It could be a pat on the back or a nod of the head in the learner’s direction or a supportive comment. The feedback says, “Hang in there. Keep trying. You’ll get it soon.” It could be the most important feedback that a learner gets, particularly for learners who are struggling a bit.

An instructor’s second option for feedback is using the feedback for reinforcement purposes. Basic psychology tells us that an event that is followed by something positive will increase the likelihood that that specific event will occur again. Said another way, actions followed by rewarding consequences tend to be repeated. As instructors, when we see a learner do something correctly, then we can say or do something that lets the learner know that he/she has performed the skill (or a part of the skill) correctly. This positive reinforcement is a powerful learning tool and we should make sure that learners receive positive reinforcement on a regular basis. Oddly enough, negative reinforcement is also an effective learning tool. An event that is followed by something negative will decrease the likelihood that that specific event will occur again. When a learner does something incorrectly, then it is permissible to point out the error. However, this creates a somewhat negative environment and some learners may feel embarrassed or ashamed of their performance. Therefore, it’s good advice to balance positive and negative reinforcement in feedback presentations. Rely more on positive reinforcement and use negative reinforcement judiciously.

It has been suggested that the third function of feedback is the most important one, that is, feedback as error correction. Ultimately we want our learners to perform the skill correctly, so it is important to get to the point where no errors a made while executing the skill. When we give error correction feedback, we stress proper technique and proper fundamental movement patterns. Many intermediate and advanced learners have acquired good error detection skills, but lack error correction capability. Therefore, it is the instructor’s job to be knowledgeable about correct technique and make sure that each learner exhibits good technique.

Finally, there exists the question about how much feedback to give to learners. Research shows that the optimum amount of feedback is feedback on about 50% of the trials. It is not advisable to give feedback after every trial, that is, 100% feedback. Also, feedback should be faded, that is, give more feedback early in the learning process and less feedback later in the learning process so that, in the end, the learner has received feedback on about one-half of the trials.

SUMMARY

Be aware of where each learner is in terms of the stages of learning and use the appropriate techniques associated with each stage. Use feedback for motivation, reinforcement and correction and try to provide more feedback in the early stages of learning and less feedback in the later stages of learning.

Coordinator Note: Dr. Steve Edwards is nationally known in the field of sports psychology. He works with athletes at all levels to improve their psychomotor skills. Fortunately for us, he is also an active
volunteer with the Ingalls Fire Department. From his experience as a college professor and a fire fighter he understands the importance of quality, on-target skills training. While this is a technical article, the information provided should be helpful to all fire service instructors. I will be working with Dr. Edwards to get additional articles in other adult training areas.

Ed Kirtley