Enhancing hands-on training with online learning

Online learning can meet many of the demands of the human brain to engage with the material, retain information and ultimately perform better in the real world

By Chief Joel Shults, Ed.D., Jonathan Wender, Ph.D., and Nassar S. Nassar, Ph.D.

The Challenge of Crime in a Free Society was released in 1967 as fear of crime grew in the mix of civil unrest played out on America's nightly network news in the long shadow cast from the assassination of President Kennedy. The report's timeliness was remarkable given the ensuing upheaval in crime and justice issues for the next decade and beyond, and it is still relevant today given the latest calls for police reform.

In that seminal report, the word "college" appears 94 times in the 342-page document with a final recommendation that college education is increased for police officers and college-educated officers granted better hiring opportunities. The reason this is significant is that policing had previously been seen as a relatively low-skilled occupation, the requisite skills for which could not be learning in a classroom.

Today's discussions on the value of education are still couched in a dichotomy of classroom versus vocational teaching and learning, degrees versus certificates, brain work versus muscle work, and "sage on the stage" delivery versus "hands-on" training. Interestingly, and most relevant to this discussion, is that these lines of demarcation are not so clear in the center of the learning process – the brain.

Mental and physical processes

The learning process moves from what researcher Paul Smolensky calls the conscious processor to the intuitive processor. We understand this when we try to teach a novice to drive a car. The things experienced drivers do are intuitive and hard to articulate to any person who has never driven an automobile. What the new driver might know is from inactive observation from a passenger seat. In considering that learning process from watcher to driver, we understand that there are mental processes that must connect to what

the hands, feet and eyes do for successful driving to take place. How much of that mental process must be immediately attached to the physical sensations of touching the steering wheel, reaching the pedals, and finding the windshield wiper switch?

Research on decision-making in medical training for nurses shows that developing skills of perception and cognition are key to expert performance and can be learned in a low-fidelity, online environment with reflection and follow up simulation. So, while online learning can never replace the "hands-on" process of acquiring physical skills such as driving, shooting, and defensive tactics, online training can play a critical role in developing the decision-making skills required to effectively perform these skills.

Furthermore, digital learning can accelerate the development of expertise in a way that hands-on training by itself cannot. We can all think of officers who are high-performance drivers or shooters, but who nonetheless make poor decisions in the real world about how, when, and where to use these skills. This is why psychomotor skills and decision-making must be learned and practiced in an integrated manner, rather than following a siloed model as is too often the case.

We understand that there is valuable and foundational learning that can occur before going "hands-on." Every driver's education, firearms and arrest control course is preceded by a classroom orientation session. The practice of trainers and teachers is to use classroom engagement in skills development. If our experience validates this connection, the question is whether that classroom engagement can be delivered remotely via online platforms, and the extent to which it can be integrated with live skills training.

A tipping point in virtual education

With a fixed paradigm in traditional brick and mortar classrooms, it took well over a decade for the education community to accept virtual learning as a legitimate and credible delivery mechanism within the knowledge dissemination process. The shift in public safety training will be much shorter for two main reasons:

1. Public safety trainers are generally grounded in educational institutions and can effectively transfer lessons learned in the education sector into practical applications and training solutions at a faster pace.

2. The gap between higher expectations and limited resources is more extreme in public safety training. In other words, public safety professionals do not, typically, enjoy the same level of robust resources afforded to higher education; hence more emphasis on efficiency.

As in virtual education, virtual training is more efficient as it negates the limitations of time and space. As in education, the acceptance of virtual distribution of knowledge will largely be driven by technological advances, as well as the continuous bandwidth expansion on a large scale and in more locations. We should expect a similar wide adoption by various segments within the public safety sector at a faster rate now that the tipping point has occurred.

Finally, the COVID-19 pandemic and new demands for major police reform can only speed up the adoption pace as the need for "virtual" training will be exponential.

– Nassar S. Nassar, Ph.D.

Basic principles of learning and retention

A paper from the Distance Education and Training Council cites four principles of learning:

1. Contiguity
2. Repetition
3. Reinforcement
4. Social-cultural

Contiguity is enhanced when the learner identifies new material with the knowledge they already possess. This can be accomplished by immediate feedback, and by comparisons, metaphor and simile, relating to some life experience or adding to a foundational body of knowledge. All of these are transmissible with online learning methods.

Repetition can be easily accomplished in online presentations. Especially in strengthening memory and retention, the presentation of concepts using repeated words and practicing, identifying, or rephrasing those concepts throughout the instruction helps move knowledge from short term memory to long term memory.

Reinforcement can be programmed into online learning platforms with frequent opportunities to complete assessments. Learning programs with immediate quizzes or engagement with the material allows for positive feedback.

Social-cultural engagement with the training materials can be a challenge in online platforms. When learners engage with others to discuss the material and find context for the information, the material develops personal and emotional relevance and connections that attach powerful feelings to the knowledge, embedding it further in the mind. The current generation of gamers is often very social online, and those attachments can translate to learning platforms as well.

In examining each of these essential learning principles, the use of online learning platforms can meet the need. Practice and rehearsal of skills can occur online as well.

In Motor Control and Learning: a Behavioral Emphasis, Schmidt and Lee assert that mental rehearsal has a measurable outcome on skill development. Extensive

research on deliberate practice and decision-making show across many fields ranging from sports and medicine to policing that practicing key cognitive and perceptual skills accelerates the development of expertise. Schmidt and Lee cite multiple studies in their section on mental practice that give evidence of significant improvement in physical skills with mental practice. Research comparing piano and basketball throwing skills of persons unskilled in either of those tasks shows a significant effect on the proficiency of the actual task from mental rehearsal. "Mental learning does transfer to physical performance" according to studies cited in neurosciencenews.com.

Conclusion

No one imagines that the firing range, driving track and boxing ring are going to be replaced by online learning. It is clear, however, that many of the goals of skills training can be met by remote learning.

The decision-making skills that enable the judgments within which technical skills are performed can be practiced and improved using low-cost, high-repetition digital tools. Moreover, the growing capacity of online learning platforms to provide detailed feedback to learners and their agencies offers the potential to move past "check the box" exercises that neither measure nor change performance in any meaningful way.

When it is well-designed and supported by effective trainers, online learning can meet many of the demands of the human brain to engage with the material, retain information, mentally rehearse, find social and cultural meaning, and ultimately perform better in the real world.

Digital learning can accelerate the development of expertise in a way that hands-on training by itself cannot.