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The transfer problem in police training: From training hours to operational readiness

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ABSTRACT

Police training is intended to produce professional competence, yet it often functions as a compliance system that rewards course hours, checklists, and isolated proficiency tests without reliably producing field-ready performance. Using firearms as a clear case, we show a pronounced transfer gap: officers commonly perform well during range qualification, but accuracy drops sharply in real shootings, even in the skill area that receives the most formal training. We argue that this gap reflects three structural problems in contemporary police training. First, officers do not receive enough total practice to develop durable capability. Second, training is commonly scheduled in ways that undermine learning and retention, with too much content delivered in long, infrequent blocks rather than spaced and revisited over time; evidence also supports interleaving related skills to strengthen retention and transfer. Third, many training tasks are not designed to support transfer because they are not representative, decouple perception and action, and overemphasize "the correct" technique. Drawing on ecological dynamics and the Constraints Led Approach, we propose representative practice that preserves key informational constraints, promotes repetition without repetition, and treats trainees as adaptive problem solvers. We integrate this with the four Ps of knowing to argue for a flipped model of learning that begins with participatory, scenario grounded training and builds perspectival, procedural, and propositional knowing from that base, as part of a broader shift toward a sustained culture of training.

Introduction

Although training is intended to develop professional competence, in policing it often functions primarily as a compliance signaling mechanism. Officers accumulate course hours and meet testing benchmarks. They demonstrate proficiency in isolated tasks, yet these activities rarely translate into consistent field performance. The persistent gap between high training scores and poor operational outcomes suggests a system optimized for meeting mandates rather than developing capability.

If training is central to professional competence, why does excellent performance in training so frequently deteriorate under operational conditions? The remainder of this chapter addresses that question. Drawing on existing research, we show that police training is deficient in three areas: (1) Officers simply do not train enough, (2) the scheduling of training sessions does not maximize learning and retention, and (3) the tasks officers practice are unlikely to support transfer from the training environment to the field. We close by calling for policing to move toward becoming a true culture of training to strengthen the profession.

To illustrate these structural problems, we begin with firearms training because it occupies a significant portion of mandated academy hours and has generated a relatively large body of empirical research. This domain provides a clear lens through which to assess how effectively police training prepares officers for the realities of field performance.

Firearms Training

Firearms are arguably the most heavily trained skill in policing. From the police perspective, this emphasis is justified by their role as the state's situational users of force, where the lawful use of deadly force represents the most consequential and irreversible exercise of police authority (Bittner, 1970). Firearms occupy a substantial portion of preservice training for recruits and have for decades (Sloan, Paoline, & Nobles, 2025; Buehler, 2025). In Texas, for example, the state requires 736 total academy hours, with 48 (7%) of those hours dedicated specifically to firearms (Texas Commission on Law Enforcement, 2023). In Texas, Firearms also receive more instructional time in the academy than any other single skill area. National data show the same pattern. In the 2022 Census on Law Enforcement Training Academies (CLEATA) data (which surveyed more than 600 academies across the US), firearms averaged seventy-three required instructional hours, more than any other specifically assessed topic (Buehler, 2025). Beyond the academy, officers must requalify with their firearms on a recurring basis, usually at least once per year, with some agencies requiring even more frequent assessments.

The obvious next question is whether this amount of training produces officers who are competent with their firearms. The answer depends on how competence is measured. On the range, performance appears strong. Many states require officers to score at least seventy percent on their qualification courses (Alabama Peace Officers' Standards and Training Commission, 2020; Kansas Commission on Peace Officers' Standards and Training, n.d.; Mississippi Board on Law Enforcement Officer Standards and Training, n.d.; Texas Secretary of State, 2025; Virginia Administrative Code, 2025). Some states go further, requiring that 100 percent of the rounds fired during qualification strike the target (Colorado Peace Officer Standards and Training Board, 2023; Michigan Commission on Law Enforcement Standards, 2023).

In some systems, qualification is based on cumulative points rather than simple hit or miss criteria. Targets include multiple scoring zones, with more precise hits earning more points. A central hit might be worth five points, while a peripheral hit earns three. Both rounds strike the target, yet one counts for only sixty percent of the available points. Under these systems, an officer can fail to qualify even when every round lands on the target, simply because too few shots fall in the higher value zones. By the end of the academy, recruits commonly score above ninety percent on complex stages of fire. Measured on the range, firearms training appears to be effective.

The story on the street is very different. Numerous studies have examined police accuracy during actual shootings, and two primary approaches are used to measure it. The first asks whether any round fired by any officer struck the suspect during the encounter. This is often called incident accuracy. If ten officers fire five rounds each, producing fifty total rounds, and only one round hits the suspect, the incident is coded as a successful hit. The second approach evaluates accuracy at the level of each round fired, which is called per-round accuracy. Figure 1 summarizes the results from these studies (Sources for these data are in the supplement). The filled in gray circle markers represent the encounter accuracy reported in a study and the open circle markers represent per-round accuracy found in a study. Not surprisingly,

encounter accuracy is generally higher than per-round accuracy, but accuracy is low under both definitions. For this chapter, we mathematically combined the available data weighted by the number of observations in each study to produce a weighted average estimate of police accuracy. This approach yielded an average incident accuracy of 46% and an average per-round accuracy of 25%.

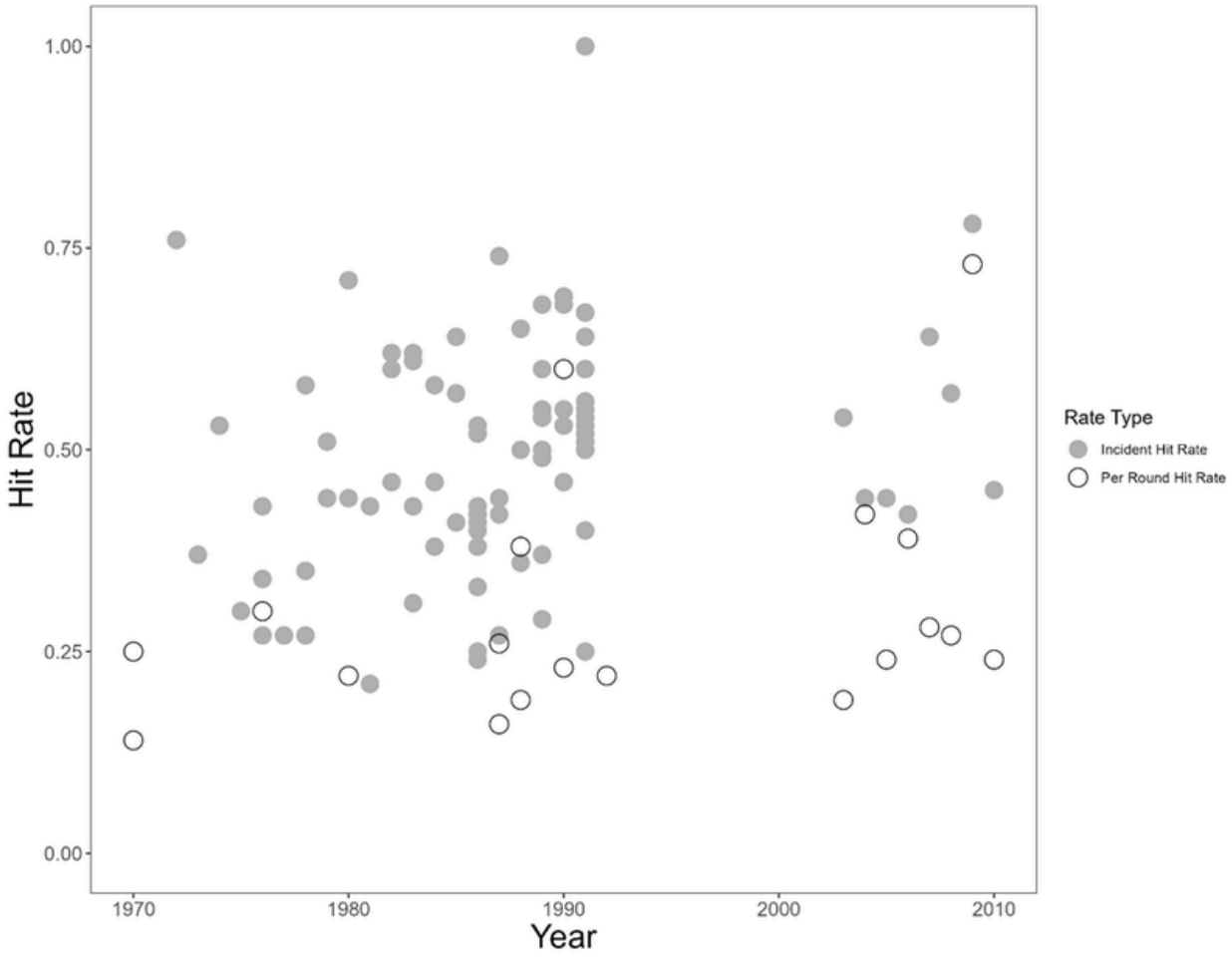


Figure 1. Police Accuracy in Actual Shootings

This pattern is a clear example of a failure of transfer. Trainees show high proficiency in the controlled conditions of the range, yet once they are operating as full police officers, their proficiency in real encounters is far lower. In other words, the skills demonstrated in training did not carry over to the job. And this gap appears in the single most heavily trained skill in policing. It raises the likelihood that many other skills taught in the academy also fail to transfer to real practice.

The natural question is why. Why do officers perform well in firearms training yet so poorly in the field? When we speak with trainers and review the literature, many explanations are offered, but they tend to converge on three issues. First, officers are not training enough. Second, the way training is structured does not maximize learning or retention. Third, the activities used in training do not promote transfer to real-world performance. We address each of these in turn.

Police Officers Do Not Receive Enough Training

According to CLETA data, the average U.S. police academy provides roughly 800 hours of pre-service instruction, followed by an average of 500 hours of field training (Buehler, 2025). Together, that represents about 1,300 hours of training before an officer is cleared for independent duty. If the training is completed full-time, this takes about 8 months. After that, ongoing in-service training varies widely but is often ranges between 20–80 hours per year, most of which is devoted to mandated updates or qualifications rather than skill development.

This number lands awkwardly against the cultural benchmark made famous by Malcolm Gladwell's Outliers (Gladwell, 2008). Gladwell popularized the idea that mastery in any field requires 10,000 hours of deliberate practice. His claim drew from Anders Ericsson's research on expert performance, but it also distorted it. Ericsson never proposed a fixed threshold for mastery. His studies in music and sports showed that expert performance depends on deliberate practice, which is structured, effortful, feedback-rich work designed to improve specific aspects of performance (Ericsson, Krampe, & Tesch-Römer, 1993; Ericsson & Pool, 2016). The key was not the total number of hours, but the quality of those hours. Still, the comparison illustrates a simple point: police officers spend only a fraction of the time other professionals devote to reaching proficiency, let alone mastery.

To put this in context, registered nurses typically complete 2,500 classroom hours and 700–1,000 clinical hours over a two- to four-year degree before entering practice (AllNursingSchools, n.d.; NursingCE, n.d.). Physicians complete 12,000–16,000 hours of supervised clinical training during medical school and residency (American Medical Association, 2024; Safe Anesthesia, 2024). Skilled trades such as electricians and plumbers require 8,000 hours of supervised apprenticeship before full licensure (Texas Department of Licensing and Regulation, 2024; U.S. Bureau of Labor Statistics, 2024; Northwest Arkansas Community College, 2024). Hairdressers typically complete 1,500–3,000 hours of schooling or apprenticeship, depending on the state (Texas Department of Licensing and Regulation, 2024; Georgia State Board of Cosmetology and Barbers, 2024; Next Insurance, 2024).

The amount of preservice training police receive looks less like medicine or the skilled trades and more like cosmetology. This comparison is not meant to disparage hairdressers. It highlights a hard truth: we grant officers life-and-death authority after far less total preparation than is required for many other licensed occupations. If we expect officers to perform competently in the complex environments where they work, it is reasonable to conclude that far more training than is currently required is necessary.

Training Sessions are Not Scheduled to Maximize Learning and Retention

Spacing

When officers train, the timing of practice sessions matters as much or more than the volume of training. Learning research consistently shows that spreading practice out over time, which psychologists call

spaced or distributed practice, produces stronger and longer-lasting learning than cramming the same hours into one or two long blocks. In a classic review, Lee and Genovese (1988) demonstrated that spacing practice sessions led to better retention of motor skills, even when the total amount of practice time was identical. Subsequent meta-analyses have confirmed this pattern across hundreds of studies. Donovan and Radosevich (1999) found that distributed practice improved both cognitive and motor performance, while Cepeda and colleagues (2006) showed that the effect was robust across age groups, tasks, and learning conditions. The key insight from this work is that learning requires reconstruction, not simple recognition (Lee & Magill, 1985). Each return to practice forces the learner to retrieve and rebuild what they learned before, which strengthens memory and adaptability (Krakauer & Shadmehr, 2006).

Spacing also helps with decision-making and cognitive skill development. Kang (2016) summarized the research in education, concluding that spaced practice supports faster and more efficient learning without requiring additional training time. In high-stakes domains such as aviation and the military, distributed refresher training has been shown to slow or even prevent skill decay (Arthur et al., 1998).

These findings translate directly to police training. All skills that involve action combine perceptual judgment with coordinated movement. Most law enforcement activities involve action; therefore, law enforcement skills are precisely the kinds of abilities that benefit from spacing (Shea et al., 2000; Wulf & Shea, 2002). Long, single-day sessions may boost short-term performance but do little for retention once fatigue sets in. Fatigue, rather than strengthening performance, suppresses the neural processes that consolidate learning (Kantak & Winstein, 2012). Spacing, in contrast, allows for recovery and leverages the role of sleep in reconsolidating both motor and decision memory (Walker & Stickgold, 2006). In practice, this means officers will retain and transfer skills more effectively when training is broken into shorter, recurring sessions—such as four 4-hour or eight 2-hour blocks—rather than compressed into one or two marathon days.

Although the benefits of spacing are well established, there is no single formula for how finely training should be divided. Research suggests a point of diminishing returns: once practice is distributed enough to allow for partial forgetting and retrieval between sessions, further subdivision provides little added benefit (Carpenter, Pan, & Butler, 2022). The key lesson from the research seems to be that spacing must allow sleep and some forgetting between training sessions. Once that is accomplished, we lack specific research data to determine optimal spacing in police training.

Interleaving

Another way to improve learning is to mix practice topics within a single session. This approach, often referred to as interleaving or the contextual interference effect, involves alternating related skills or concepts rather than practicing them in isolated blocks (Shea and Morgan, 1979). Although interleaving has been widely studied in other fields, very little research has examined it in policing.

Even so, large meta-analyses consistently show that interleaving produces better retention and transfer than traditional blocked practice across a wide range of learning contexts (Brady, 2004; Brunmair and Richter, 2019; Czyż, Wójcik, Solarská, et al., 2024). The typical effect size in applied settings is small, but there is evidence that the benefits tend to be larger for adult learners, which suggests meaningful relevance for police training.

One recent randomized controlled trial examined the effects of practice volume, spacing, and interleaving on knowledge acquisition and retention. The study followed 152 recruits across five police academies in different states and used a combination of spaced and interleaved training to examine effects on knowledge retention (Beer-Maxwell, Blum, Bonadies, Herbert, and Schaefer, 2023). Recruits were assigned to one of four conditions: in-person traditional, online traditional, in-person integrated, or online integrated. All recruits completed a pretest and then received a baseline communication skills lesson either in person or online.

Thirty days later, the integrated groups received a supplemental session that applied the communication skills to encounters with people in crisis. This session used a mix of lecture and role-play and covered topics such as types of crises, behavioral indicators, assessing risk, and strategies for de-escalation. All groups then took a second knowledge test.

Thirty days after that, the integrated groups completed another supplemental session that focused on applying communication skills during a motor vehicle stop. This training again combined lecture and practice and included making initial contact with the driver, using appropriate body language, active listening, question strategies, and explaining decisions. All groups completed another knowledge test after this session. A final knowledge test was administered 30 days later, approximately 90 days after the initial training.

As shown in Figure 2, the results were striking. The integrated groups outperformed both traditional groups and continued to gain knowledge over time rather than lose it. This study represents a blend of all three training principles discussed in this chapter so far. The integrated groups received more total training, the sessions were spaced across time, and the supplemental lessons were interleaved with other skills relevant to crisis encounters and traffic stops. While the tests were limited to knowledge acquisition and retention and the study has other significant limitations, the study at least suggests that these concepts work in policing context.

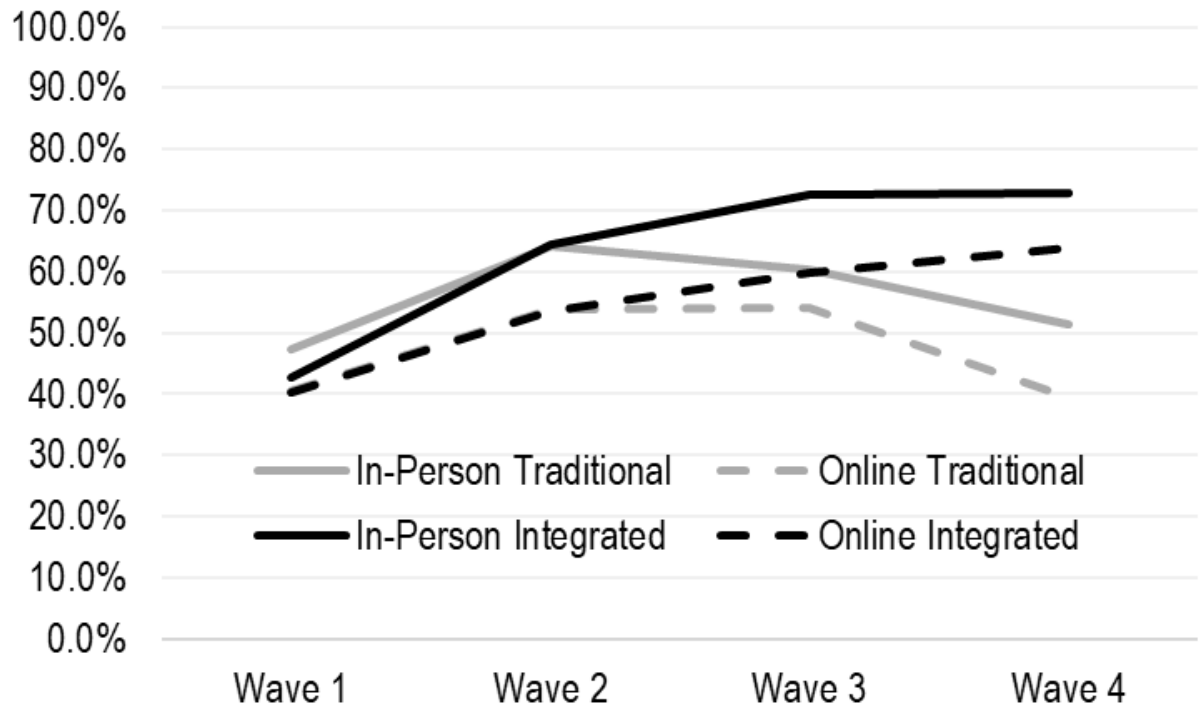


Figure 2. Outcomes from Beer-Maxwell et al. (2023)

The Tasks Officers Practice Are Unlikely to Support Transfer

Up to this point, we have made relatively straightforward suggestions: police officers need more total training, and that training should be spaced over time and topics interleaved to strengthen learning and retention. The next issue is more complex. It concerns the tasks officers practice during training. Sloan and colleagues' (2025) multi-wave assessment of academy curricula showed that little has changed over the past two decades. Roughly 70 percent of training time still centers on operations and weapons skills, while areas like communication, decision-making, and community interaction remain marginal. The persistence of this imbalance reflects a deeper problem: the way the field conceptualizes skill and how it is acquired. Addressing that problem requires a shift in perspective from treating skills as procedures to be memorized, to understanding them as adaptive, perception–action capabilities that emerge through interaction with the environment.

The dominant approach to skill acquisition has long held that becoming skilled involves developing internal memory structures such as motor programs, muscle memory, or proceduralized knowledge that allow an ideal technique to be repeated with little variation and minimal conscious attention (Fitts & Posner, 1967). In this view, skill is defined by consistency and automaticity. Once the correct technique is learned, it can be executed reliably without conscious control.

This perspective has supported many of the training methods described earlier, including strict repetition of prescribed techniques to eliminate unwanted variation, task decomposition that removes skills from

their operational context, and the decoupling of perception and action. These methods create training environments that are orderly, predictable, and easy to standardize, but they differ substantially from the conditions officers face in the field. A target on a range does not move unpredictably, does not shoot back, and is not intermixed with innocent bystanders.

Research on transfer helps explain why this matters. When the practiced task closely resembles the operational task, often referred to as near transfer, training reliably improves performance in that same context (Schmidt & Young, 1987). As discussed earlier, practicing on the range makes officers better range shooters. However, when there is a large separation between practice and operational performance in terms of physical demands, perceptual information, time pressure, and psychological stress, far transfer is weak or absent. Under these conditions, little if any improvement carries over to real encounters.

More recently, an alternative account of skill acquisition, known as ecological dynamics, has been proposed (Davids et al., 2008; Gray, 2021). In this framework, skill is not defined as the ability to retrieve and execute an ideal technique from memory. Instead, skill is understood as the ability to establish functional relationships between the performer and the environment in order to achieve a goal under specific conditions. Rather than repeating the same movement pattern on every attempt, skilled performers adapt their actions to the constraints they are facing. As a result, performance is characterized by functional variability, with small adjustments from one execution to the next that allow outcomes to remain effective.

From this perspective, becoming skilled is best understood as becoming an adaptable movement problem solver. Learning is not about eliminating variation, but about shaping it so that performance remains effective across changing situations. This view has direct implications for how police training should be designed.

Several practical principles for training follow from ecological dynamics (Otte et al., 2021):

1. Train the way you perform. Training should be representative of the environments in which officers are expected to operate. This includes the perceptual information available, the actions required under realistic time and space constraints, and the decision-making demands of the situation. Reducing the distance between training and operations increases the likelihood that learning will transfer.

2. Maintain perception–action coupling. Actions such as drawing or firing a firearm should be guided by the same types of perceptual information officers will encounter in the field, such as the movement and behavior of another person, rather than artificial cues like a static bullseye. This principle also applies to situations in which perceptual information indicates that no action is required, reinforcing that decision-making is inseparable from skilled performance.

3. Promote repetition without repetition. Training should vary conditions of practice so that officers learn to achieve the same outcome goals by adapting their movements to different situations. The

objective is not to reproduce identical techniques, but to develop flexible performance that remains effective as conditions change.

4. Treat the trainee as the problem solver. Rather than prescribing ideal techniques, instructors design environments that require learners to adapt their movements to meet situational demands. Learning occurs through exploration and adjustment, not by copying a model.

The primary instructional framework associated with ecological dynamics is the Constraints-Led Approach (Renshaw et al., 2019). A constraint is any factor that limits or shapes the available movement solutions (Newell, 1986). Constraints can be individual, such as fatigue or physical capability; task-related, such as equipment or rules of engagement; or environmental, such as lighting, terrain, or weather. When constraints change, certain movement solutions may no longer be viable. For example, if a target is moving away, the ground is slippery, or the officer is fatigued, a solution that depends on fully stabilizing the firearm before shooting may no longer be possible. In the Constraints-Led Approach, instructors deliberately manipulate constraints to create new problems for trainees to solve, guiding them toward functional and adaptable solutions without prescribing specific techniques.

An example of this approach in police training can be seen in a study by Koerner and colleagues (2020). Twenty German police recruits were assigned to one of two training groups over a three-week period. Before and after training, recruits were tested on their ability to defend against several knife attacks that were practiced during training, as well as one surprise attack that was not practiced. Performance was evaluated through video analysis to determine whether each attack was successfully defended.

In the traditionally trained group, recruits were taught ideal techniques for each type of attack through instructor demonstration and verbal explanation. Trainees then practiced these techniques without an attacker and received corrective feedback, with a different attack defense covered each week. In contrast, the Constraints-Led group trained in environments where task constraints were systematically varied, including the number of attackers, the line and speed of attack, starting positions, and the size of the fighting area. Rather than being shown specific techniques, trainees were given general principles to guide their actions, such as creating distance between themselves and the weapon.

After training, recruits in the Constraints-Led group defended the surprise attack more successfully than recruits in the traditional training group (81.8 percent versus 55.6 percent at the retention test), were struck less often, and resolved it more quickly. Overall, the Constraints-Led group performed better and showed more learning growth. These findings are consistent with the claim that training designed to develop adaptive problem-solving skills is more likely to support transfer when conditions change.

Taken together, ecological dynamics and the Constraints-Led Approach explain why many police training tasks fail to produce durable field performance. When skills are taught as isolated techniques, stripped of perceptual demands and decision-making, officers may perform well in training but struggle when conditions change. These frameworks clarify how action emerges from continuous interaction with the

environment and why perception and action cannot be separated. What they leave less explicit is how officers come to inhabit those interactions as professionals. Skill involves more than coordinating movement and perception. It also involves judgment, meaning, identity, and participation in a role.

Getting Out of the Silos: Toward Integrated Knowing in Police Training

To address these additional dimensions of learning, we turn to the four Ps of knowing (Vervaeke & Mastropietro, 2021a, 2021b; Vervaeke & Ferraro, 2013; Beykoylu et al., 2025). The four Ps provide a complementary framework for understanding how officers learn to see what matters, decide how to act, and participate skillfully in real situations. Together with ecological dynamics, they offer a way to move beyond fragmented skill instruction and toward a more integrated understanding of professional competence.

Propositional knowing is knowing that – for example, the thing you use to load a semi-automatic pistol is a magazine, or officers can use deadly force in situations where they perceive a risk of serious bodily injury or death to themselves or others. Propositional knowing includes the facts, concepts, and descriptions officers can state or write down: legal standards, policy requirements, threat indicators, or steps in a protocol. This is the information most academy curricula place at the front of instruction.

Procedural knowing is knowing how. It is the ability to execute actions and demonstrate skills. These are the capabilities a person possesses and can bring to bear in practice. In policing, this includes manipulating a firearm, patting down a suspect, applying a tourniquet, moving through a structure, and talking to people. It is the doing side of training.

Perspectival knowing is knowing what it is like. It captures an officer's ability to read a situation, sense what matters, and recognize what is emerging. This includes picking up on subtle threat cues, noticing when a subject's behavior is shifting, or seeing opportunities for de-escalation. Perspectival knowing shapes judgment in real time and guides when and how skills are used.

Participatory knowing is knowing by being. It reflects an officer's attunement to their role, their environment, and the people they interact with. It involves presence, identity, and engagement with the constraints and possibilities of the moment. This form of knowing underlies professional intuition, adaptability, and the ability to act as part of a team or community.

The Traditional Model of Learning

In most police training programs, these four forms of knowing are presented in a fixed sequence. Officers first learn the facts (propositional), then practice steps and techniques (procedural), then encounter scenarios intended to build situational judgment (perspectival), and finally, over time, are expected to grow into the role and identity of a competent practitioner (participatory). This linear progression is familiar and intuitive. It mirrors how many educational systems are organized: teach the information

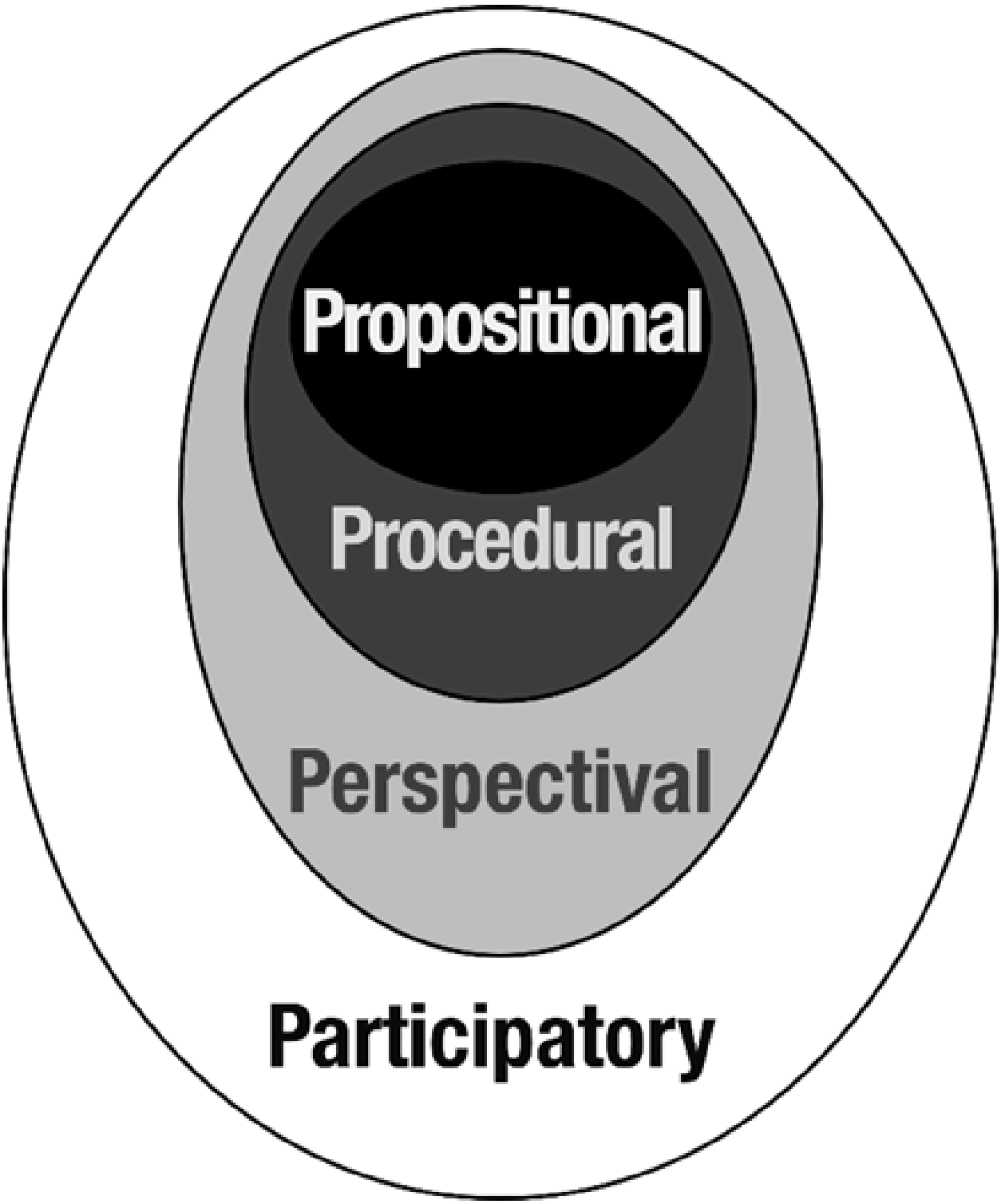
first, drill the skills second, introduce scenarios third, and trust that professional presence will emerge through experience.

This model assumes that later experience will naturally complete what formal instruction begins. Like other professions, policing relies on informal learning during supervised work to refine judgment and professional identity. Research in medicine, teaching, and the skilled trades shows that novices routinely acquire norms, heuristics, and practices that are not fully specified in formal curricula (Becker et al., 1961; Lave & Wenger, 1991). In these settings, however, informal learning typically builds on prior instruction. Supervised practice extends classroom learning into environments that closely resemble eventual performance settings, preserving continuity in tasks, tools, and evaluative standards.

Policing departs from this pattern in both degree and consequence. Academy training and field training operate according to fundamentally different instructional logics. The academy is structured, decontextualized, and compliance oriented, while field training is informal, highly variable, and shaped by local norms and individual trainers. This discontinuity is often made explicit to new officers through a familiar refrain during field training: “Forget what you learned in the academy; this is how things really work.” Classic and contemporary research on police socialization documents this divide, showing that field training frequently functions not as an extension of academy learning, but as a corrective to it, reshaping officers’ perceptions, priorities, and practices through informal norms and situational exposure (Van Maanen, 1973; Fielding, 1988; Chan, 2003).

The profession thus places substantial faith in post academy experience to reconcile the gap between formal training and operational performance. This reliance is especially consequential given the compressed timelines and irreversible outcomes associated with police use of force. As we have seen in the firearms example, the result is learning that does not reliably transfer. Officers may score well on written exams and perform drills with precision, yet struggle when confronted with uncertainty, time pressure, and interpersonal complexity in the field. Performance becomes brittle and context bound, shaped as much by local exposure and informal socialization as by training design.

The Flipped Model of Learning



The flipped model - Adapted from Beykoylu et al. (2025)

Ecological dynamics and the 4Ps suggest reversing this sequence. Instead of treating participation as something that develops only after knowledge and skills are acquired, learning begins with doing in

context. In this flipped model, participatory knowing provides the foundation. Officers engage from the start in meaningful, representative situations where they act, coordinate, communicate, and respond to uncertainty. These experiences shape identity, belonging, and purpose. They establish the sense that the officer is part of a real system where decisions matter. In short, in the flipped model, all training is grounded in scenarios where trainees are placed in the role of police officers and expected to act as police officers.

From this participatory base, perspectival knowing grows. Officers learn what situations feel like. They begin to discern what is relevant, what is shifting, and what is possible. This awareness is the engine of adaptive performance. It is the capacity that supports reading a room, anticipating danger, noticing opportunities, and adjusting to changing conditions.

Procedural knowing emerges as learners repeatedly interact with varied environments. Skills become more than memorized steps. They become flexible, timed, and responsive to what the situation demands. Instead of performing a technique because they were taught it, officers perform it because the moment calls for it.

Propositional knowing comes as a part of the process. Trainees learn the language and concepts needed to discuss and explain their actions. The propositions (facts, concepts, and rules) become meaningful because they are tied to something the learner has experienced. This meaningful learning is much more likely to be retained by the trainee.

This inverted model might sound radical, but most people in the United States have already learned something this way. It is how they learned to ride a bike. Parents do not gather their children in a room, lecture them on the parts of a bicycle, review the rules of the road, explain the physics of balance, and then place them on a stationary bike to practice pedaling form. They put the child on a modified bike with training wheels or a balance bike and let them try. When the child struggles, parents offer a word of guidance or a steadying hand, but the real learning comes from exploring and figuring out how the bike works. As the child improves, the supports change or disappear entirely. No one has to demand repetitions. The child practices because it is enjoyable. They challenge themselves by riding on grass or dirt because they want to expand what they can do.

This is participatory learning. The child steps into the role of a bike rider and gains the perspective that comes with that role. They learn what information matters for steering, balancing, and moving through space. Through action, they develop procedural knowledge of how to keep a bike upright and headed toward a destination. Through conversation and experience, they pick up the propositions of bike riding: the names of parts, the rules that govern use, and the language we use to describe what we are doing.

This learning sticks. Many adults have not touched a bicycle in years, yet they still know what the pedals and handlebars are, how to mount the bike, and how to get it moving. Most could ride away with only a moment of hesitation. When we say something is “like riding a bike,” are we pointing to the ease with

which long-dormant abilities come back online or are we really acknowledging that the way the learning occurred was extremely durable? We think it is clear that riding a bike is not inherently simpler than many of the other skills we learn. It was just learned in a way that makes it much more lasting.

We think the same logic applies to police training. When officers begin by engaging real problems, they build perspectival and participatory foundations that make procedural and propositional knowledge meaningful. They learn to adapt because adaptation is baked into the structure of training. Skills become woven into a network of roles, affordances, relationships, and responsibilities. Knowledge becomes something lived rather than something memorized. The familiar silos start to dissolve, and performance in the field aligns more closely with performance in training. Communication, situational awareness, decision-making, de-escalation, firearms, and defensive tactics do not appear as separate modules. They show up together, in varied combinations, just as they do in actual calls for service.

Recent empirical work on police training outcomes lends support to this inverted approach. A large pragmatic stepped-wedge randomized controlled trial conducted in an English police force found that a revised public and personal safety training curriculum emphasizing realistic, scenario-based conflict management led to meaningful reductions in officers' use of force (Sanders et al., 2025). Officers who had completed the training were significantly less likely to use force in the weeks following instruction, with the largest reductions observed in hands-on physical force. Importantly, these reductions were accompanied by decreases in civilian injuries and no increase in officer injuries, suggesting that improved conflict management did not come at the expense of officer safety.

What distinguishes this intervention is not the transmission of new rules or techniques, but the way learning was structured. Training centered on representative scenarios that required officers to perceive risk, coordinate with others, communicate under pressure, and adapt their actions to unfolding situations. In other words, learning began with participation in realistic contexts and allowed perspectival, procedural, and propositional knowing to develop from that base. The findings suggest that when officers are trained in environments that more closely resemble the demands of real encounters, performance is more likely to transfer. While this study was not framed in the language of ecological dynamics or the 4Ps, its results are consistent with the core claim of the flipped model: that grounding training in meaningful action from the outset produces learning that is more durable, adaptable, and effective in practice.

Taken together, the findings highlighted in this chapter call into question the assumption that performance under operational conditions will reliably emerge from a foundation of decontextualized instruction followed by later exposure in the field. Traditional academy models place early emphasis on propositional knowledge and isolated procedural drills, with the expectation that officers will integrate these elements once they encounter real situations. The evidence from recent training evaluations suggests that this integration does not occur automatically. Instead, when training is organized around representative problems from the outset, allowing officers to act, perceive, and decide in context, the

resulting learning is more likely to carry forward into practice. This does not imply that facts, rules, or fundamentals are unimportant, but that their effectiveness depends on when and how they are introduced within the learning process.

The Move Toward Becoming a Training Culture

The arguments developed in this chapter point toward a conclusion that extends beyond any single course, tactic, or instructional method. If learning is participatory, context dependent, and shaped by perception–action coupling, then training cannot be treated as a discrete phase that precedes "real work." It must instead be understood as a continuous process embedded across the profession. This requires a shift from viewing training as episodic and front-loaded to cultivating a training culture that supports learning over time.

In such a system, the academy plays a different role. Rather than serving primarily as a gatekeeping or compliance mechanism, it becomes the foundation of professional development. Academy training emphasizes participatory learning from the outset, placing recruits in representative situations where they act, decide, and coordinate as police officers. The goal is not to teach everything an officer will ever need to know, but to establish durable perceptual and participatory foundations that make later learning possible. When the academy is designed this way, it reduces the need for field training to function as a corrective.

Field training, in turn, must be aligned to extend academy learning rather than replace it. Instead of telling new officers to forget what they learned, field training should operate as guided participation in increasingly complex environments, reinforcing shared principles while allowing for local variation. This requires greater coherence between academy instruction and field expectations, as well as deliberate attention to how officers are socialized into professional norms. When field training contradicts academy learning, it signals a failure of system design rather than an inevitable feature of policing.

In-service training completes the system. A training culture assumes that learning does not end at graduation or solo patrol. Skills that involve judgment, coordination, and adaptation must be revisited regularly and under varied conditions. This implies training that is spaced over time, interleaved across domains, and integrated with operational realities rather than confined to infrequent recertification events. Frequent, low-dose, high-quality training becomes a normal part of professional life rather than an interruption of it.

The fire service is often cited as an example of a mature training culture. Firefighters train routinely, rehearse rare but high-consequence events, and treat training as inseparable from operational readiness. The nature of police work differs in important ways, including how shifts are structured and the tempo of responses. Even so, the fire service demonstrates that a profession can normalize frequent training without undermining operational capacity. Policing faces distinct challenges, but the underlying

principle remains the same: performance in critical moments reflects the culture of preparation that precedes them.

Taken together, these considerations suggest that improving police training is not primarily a matter of adding new content or techniques. It requires aligning the academy, field training, and in-service instruction around a shared understanding of how learning occurs and how professional competence develops. A training culture makes that alignment visible and durable, ensuring that what officers learn in training is reinforced, extended, and refined throughout their careers rather than corrected after the fact.

References

Alabama Peace Officers' Standards and Training Commission. (2020, June 11). POST 5: Annual handgun requalification form. Retrieved from https://www.apostc.alabama.gov/wp-content/uploads/2020/06/POST-5-updated-6.11.2020.pdf

AllNursingSchools. (n.d.). Registered nursing degrees. Retrieved November 11, 2025, from https://www.allnursingschools.com/registered-nursing/degrees/

American Medical Association. (2023, November 22). What's the difference between physicians and nurse practitioners? https://www.ama-assn.org/practice-management/scope-practice/whats-difference-between-physicians-and-nurse-practitioners

Arthur, W., Jr., Bennett, W., Jr., Stanush, P. L., & McNelly, T. L. (1998). Factors that influence skill decay and retention: A quantitative review and analysis. Human Performance, 11(1), 57–101. https://doi.org/10.1207/s15327043hup1101_3

Becker, H. S., Geer, B., Hughes, E. C., & Strauss, A. L. (1961). Boys in white: Student culture in medical school. University of Chicago Press.

Beer-Maxwell, D., Blum, J., Bonadies, T., Herbert, J., & Schaefer, P. (2023). Improving learning outcomes in police academy training. Office of Community Oriented Policing Services.

Beykoylu, H., Vervaeke, J., & Meling, D. (2025). The four ways of knowing: Revising the 4P model of knowing through a non-dual and reflexive perspective. OSF Preprints. https://osf.io/preprints/osf/gw7r5_v2

Bittner, E. (1970). The functions of the police in modern society: A review of background factors, current practices, and possible role models. National Institute of Mental Health, Center for Studies of Crime and Delinquency.

Bonadies, T., Herbert, J., Blum, J., Schaefer, P., Beer-Maxwell, D., Cordner, G., & Carter, C. (2023). Recalling responses: A RCT on police learning and knowledge retention. Policing: A Journal of Policy and Practice,

17, paac110. https://doi.org/10.1093/police/paac110

Brady, F. (2004). Contextual interference: A meta-analytic study. Perceptual and Motor Skills, 99(1), 116–126. https://doi.org/10.2466/pms.99.1.116-126

Brunmair, M., & Richter, T. (2019). Similarity matters: A meta-analysis of interleaved learning and its moderators. Psychological Bulletin, 145(11), 1029–1052. https://doi.org/10.1037/bul0000209

Buehler, E. D. (2025). State and local law enforcement training academies' training topics and instructors, 2022: Statistical tables (NCJ 310041). Bureau of Justice Statistics, U.S. Department of Justice.

Bureau of Labor Statistics, U.S. Department of Labor. (2025, August 28). Plumbers, pipefitters, and steamfitters. In Occupational Outlook Handbook. https://www.bls.gov/ooh/construction-and-extraction/plumbers-pipefitters-and-steamfitters.htm

Carpenter, S. K., Pan, S. C., & Butler, A. C. (2022). The science of effective learning with spacing and retrieval practice. Nature Reviews.Psychology, 1(9), 496-511. https://doi.org/10.1038/s44159-022-00089-1

Cepeda, N. J., Pashler, H., Vul, E., Wixted, J. T., & Rohrer, D. (2006). Distributed practice in verbal recall tasks: A review and quantitative synthesis. Psychological Bulletin, 132(3), 354–380. https://doi.org/10.1037/0033-2909.132.3.354

Cepeda, N. J., Vul, E., Rohrer, D., Wixted, J. T., & Pashler, H. (2008). Spacing effects in learning: A temporal ridgeline of optimal retention. Psychological Science, 19(11), 1095–1102. https://doi.org/10.1111/j.1467-9280.2008.02209.x

Chan, J. (2003). Fair cop: Learning the art of policing. University of Toronto Press.

Colorado Peace Officer Standards and Training Board. (2023). Firearms qualification score sheet. Colorado Department of Public Safety. https://post.colorado.gov/sites/post/files/documents/Firearms%20ScoreSheet.pdf

Council on Law Enforcement Education and Training. (2025, June 26). Firearms qualification and requalification standards. Retrieved from https://oklahoma.gov/cleet/training/cleet-training/firearms-qualification-requalification-standards.html

Czyż, S. H., Wójcik, A. M., Solarská, P., et al. (2024). High contextual interference improves retention in motor learning: Systematic review and meta-analysis. Scientific Reports, 14, 15974. https://doi.org/10.1038/s41598-024-65753-3

Davids, K., Araújo, D., & Brymer, E. (2016). Designing affordances for health-enhancing physical activity and exercise in sedentary individuals. Sports Medicine, 46, 933–938. https://doi.org/10.1007/s40279-016-0511-3

Davids, K., Button, C., & Bennett, S. (2008). Dynamics of skill acquisition: A constraints-led approach. Human kinetics.

Donovan, J. J., & Radosevich, D. J. (1999). A meta-analytic review of the distribution of practice effect: Now you see it, now you don't. Journal of Applied Psychology, 84(5), 795–805. https://doi.org/10.1037/0021-9010.84.5.795

Ericsson, K. A., & Pool, R. (2016). Peak: Secrets from the new science of expertise. Houghton Mifflin Harcourt.

Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. Psychological Review, 100(3), 363–406. https://doi.org/10.1037/0033-295X.100.3.363

Fielding, N. G. (1988). Joining forces: Police training, socialization, and occupational competence. Routledge.

Fitts, P.M., & Posner, M.I. (1967). Human performance. Oxford, England: Brooks/Cole.

Georgia State Board of Cosmetology. (2025). Rules and regulations of the State of Georgia: Department 130, Rules of Georgia State Board of Cosmetology (Current through Rules and Regulations filed through November 4, 2025). Office of the Secretary of State.

Gladwell, M. (2008). Outliers: The story of success. Back Bay Books.

Gray, R. (2021). How We Learn to Move: A Revolution in the Way We Coach & Practice Sports Skills. PACE Publishing.

Kang, S. H. K. (2016). Spaced repetition promotes efficient and effective learning: Policy implications for instruction. Policy Insights from the Behavioral and Brain Sciences, 3(1), 12–19. https://doi.org/10.1177/2372732215624708

Kantak, S. S., & Winstein, C. J. (2012). Learning–performance distinction and memory processes for motor skills: A focused review and perspective. Behavioural Brain Research, 228(1), 219–231. https://doi.org/10.1016/j.bbr.2011.11.028

Kansas Commission on Peace Officers' Standards and Training. (n.d.). Annual firearms requirements. Retrieved from https://www.kscpost.gov/annualreq.html

Koerner, S., Staller, M. S., & Kecke, A. (2021). "There must be an ideal solution..." Assessing training methods of knife defense performance of police recruits. Policing: An International Journal, 44(3), 483-497.

Krakauer, J. W., & Shadmehr, R. (2006). Consolidation of motor memory. Trends in neurosciences, 29(1), 58-64.

Lave, J., & Wenger, E. (1991). Situated learning: Legitimate peripheral participation. Cambridge University Press.

Lee, T. D., & Genovese, E. D. (1988). Distribution of practice in motor skill acquisition: Learning and performance effects reconsidered. Research Quarterly for Exercise and Sport, 59(4), 277–287. https://doi.org/10.1080/02701367.1988.10609373.

Lee, T. D., & Magill, R. A. (1985). Can forgetting facilitate skill acquisition. Differing perspectives in motor learning, memory, and control, 27, 3-2.

Michigan Commission on Law Enforcement Standards. (2023). Active duty firearms standard. Michigan Department of State Police. https://www.michigan.gov/-/media/Project/Websites/mcoles/Standards-and-Training/RPTE/Firearms_Standard.pdf

Mississippi Board on Law Enforcement Officer Standards and Training. (n.d.). Standards for the successful completion of law enforcement training (Chapter 06, §101.01). Retrieved from https://sos.ms.gov/ACProposed/00020330b.pdf

Next Insurance. (2024). Cosmetology license: How to get licensed in your state. https://www.nextinsurance.com/blog/cosmetology-license/

Newell, K. (1986). Constraints on the development of coordination. Motor development in children: Aspects of coordination and control.

Northwest Arkansas Community College. (2024). Plumbing apprenticeship. https://www.nwacc.edu/academicdivisions/trailstrades/trades/plumbing.html

NursingCE. (n.d.). Continuing education requirements for nurses. Retrieved November 11, 2025, from https://www.nursingce.com/

Otte, FW Davids, K Millar, SK Klatt S (2021). Understanding how athletes learn: Integrating skill training concepts, theory and practice from an ecological perspective. Applied Coaching Research Journal, 7, 22-33.

Reaves, B. A. (2016). State and local law enforcement training academies, 2013 (NCJ 249784). Bureau of Justice Statistics, U.S. Department of Justice.

Renshaw, I., Davids, K., Newcombe, D., & Roberts, W. (2019). The constraints-led approach: Principles for sports coaching and practice design. Routledge.

Safe Anesthesia. (n.d.). Differences in education, training and practice between MDs, DOs, PAs, and NPs. https://www.safeanesthesia.com/training-differences/

Sanders, M., Bancroft, K., Hume, S., Chetwynd, O., & Quinton, P. (2025). The Impact of Training on Use of Force by Police in an English Police Force; Evidence from a Pragmatic Stepped Wedge Randomized

Controlled Trial. Justice Evaluation Journal, 8(1), 20–39. https://doi.org/10.1080/24751979.2024.2412333

Schmidt, R. A., & Young, D. E. (1987). Transfer of movement control in motor skill learning. In Transfer of learning (pp. 47-79). Academic Press.

Seifert, L., & Davids, K. (2017). Ecological dynamics: A theoretical framework for understanding sport performance, physical education and physical activity. In P. Bourgine, P. Collet, & P. Parrend (Eds.), First Complex Systems Digital Campus World E-Conference 2015 (pp. 15–37). Springer. https://doi.org/10.1007/978-3-319-45901-1_3

Shea, C. H., Lai, Q., Black, C., & Park, J. H. (2000). Spacing practice sessions across days benefits the learning of motor skills. Human Movement Science, 19, 737–760. https://doi.org/10.1016/S0167-9457(00)00021-X[4]

Shea, J. B., & Morgan, R. L. (1979). Contextual interference effects on the acquisition, retention, and transfer of a motor skill. Journal of Experimental Psychology: Human Learning and Memory, 5(2), 179–187.

Sloan, J. J., Paoline, E. A., & Nobles, M. R. (2025). The more things change, the more they stay the same: A multi-wave national assessment of police academy training curricula. Criminology & Public Policy, 24(1), 12691. https://doi.org/10.1111/1745-9133.12691

Texas Commission on Law Enforcement. (2023). History of the Basic Peace Officer Course. Retrieved from https://www.tcole.texas.gov/document/history_of_bpoc-2023.pdf

Texas Department of Licensing and Regulation. (n.d.). Apply for a new journeyman electrician license. https://www.tdlr.texas.gov/electricians/apply/individuals/journeyman-electrician.htm

Texas Secretary of State. (2025). 37 Tex. Admin. Code § 218.9: Continuing firearms proficiency requirements. In Texas Administrative Code, Title 37, Part 7, Chapter 218. Retrieved December 1, 2025, from https://texas-sos.appianportalsgov.com/rules-and-meetings?$locale=en_US&interface=VIEW_TAC_SUMMARY&queryAsDate=12%2F01%2F2025&recordId=198263

Van Maanen, J. (1973). Observations on the making of policemen. Human Organization, 32(4), 407–418.

Virginia Administrative Code. (2025, August 29). 6VAC20-30-80: Firearms training. Retrieved from https://law.lis.virginia.gov/admincode/title6/agency20/chapter30/section80/

Vervaeke, J., & Ferraro, L. (2013). Relevance, meaning and the cognitive science of wisdom. In M. Ferrari & N. M. Weststrate (Eds.), The scientific study of personal wisdom (pp. 21–51). Springer. https://doi.org/10.1007/978-94-007-7987-7_2

Vervaeke, J., & Mastropietro, C. (2021). Dialectic into dialogos and the pragmatics of no-thingness in a time of crisis. Eidos. A Journal for Philosophy of Culture, 5(2), 58–77. https://doi.org/10.14394/eidos.jpc.2021.0017

Vervaeke, J., & Mastropietro, C. (2021). Gnosis in the second person: Responding to the meaning crisis in the Socratic quest of authentic dialogue. In Dispatches from a time between worlds. Perspectiva Press.

Walker, M. P., & Stickgold, R. (2006). Sleep, memory, and plasticity. Annual Review of Psychology, 57, 139–166. https://doi.org/10.1146/annurev.psych.56.091103.070307

Wulf, G., & Shea, C. H. (2002). Principles derived from the study of simple skills do not generalize to complex skill learning. Psychonomic Bulletin & Review, 9, 185–211. https://doi.org/10.3758/BF03196276.