

Practice Makes Perfect

Advances in cognitive science support drills and practice.

By Matthew Robinson

Nothing attracts more ire from modern educators than asking children to memorize and practice, whether it be their spelling words or multiplication tables. When polled last year, some six of ten education professors objected to having kids memorize material.

Fully 92% of education professors say that “teachers should see themselves as facilitators of learning, who enable their students to learn on their own.” They also believe that direct instruction leads to “routinization.” This, they think, drives out understanding.

But new findings in cognitive science and psychology support drills and practice. “Nothing flies more in the face of the last 20 years of research than the assertion that practice is bad,” asserted Professors John Anderson, Lynne Reder and Herbert Simon of Carnegie-Mellon University.

“All evidence ... indicates that real competence only comes with extensive practice. By denying the critical role of practice, one is denying children the very thing they need to achieve competence,” they wrote in a recent study. “The instructional problem is not to kill motivation by demanding drill, but to find tasks that provide practice — while at the same time sustaining interest.”

The idea is causing a stir in the education world. Anderson, Reder and Simon are applying their findings in cognitive psychology to challenge the education status quo. Kids, they argue, can learn better through “deliberate practice” — through hard work and constant feedback to master knowledge and tasks.

“Nobody expects someone to be great without a great deal of practice and time in sports or music,” Anderson said. “But it still seems that in the area of education, there is the notion that

all we have to do is give a child a critical insight or inspiration and everything else will fall into place. Intellectual competence has to build up with the same kind of deliberate practice as musical talent or athletic ability.”

How He Got Up There

“What most fans saw was the ballet-like quality of his drives to the basket, and what basketball professionals, coaches and scouts saw was the complete quality of his game, the almost perfect fundamentals he brought every night and the shrewd sense of each game’s tempo, which make him almost a coach on the floor.

“When Michael Jordan was at his prime, it was common among some professional basketball people to joke about the Carolina program and zing Dean Smith for, it was presumed, suppressing the greatness of Jordan’s game during his college years. But the reverse was true. It has become obvious that Smith did not limit Jordan’s game, but instead made it what it is.

“Smith and his assistants knew from the first time they saw Jordan that the great physical ability and the hunger for the game were a given, and so Smith set out in the three years he coached him to add all the other little things that became so critical to Jordan’s greatness: the little moves on defense that came from repeating endless, boring drills; and the skills that allowed him to know when and how to pass off the double team or how to split it. The result was an almost perfect basketball player, a man with skills that few other players of comparable physical ability could match and that eventually set him apart at the championship level.”

(Time Magazine, June 22, 1998)

Do drills stifle creativity, as many educators charge? No, says Temple University psychology professor Robert W. Weisberg.

Weisberg has studied the link between creativity and knowledge in artists such as Mozart, Picasso and Jackson Pollack. What he’s found is surprising.

“It’s a paradox,” Weisberg said. “There is evidence that deep immersion is required in a discipline before you produce anything of great novelty. Before you look at significant achievement, expect to see ten years of deep immersion to gain knowledge.”

“But,” he noted, “There is this concept that genius has leaps of insight way beyond everybody else. If you look at the backgrounds of these people, there is much more of a progression. They don’t make leaps — they build in small pieces.”

Studies show that the brain actually changes with deliberate practice. A report in the journal *Science* shows that the cortical areas of the brain devoted to controlling the fingers actually expand for expert violinists.

According to California’s Comprehensive Reading Leadership Program, “It is vital that students read a large amount of text at their independent reading level, and that the text provide specific practice in the skills being learned.”

Learning requires reinforcement — practice and memorization — to master a subject. “It’s the missing link in American education,” said Arthur Bornstein, a memory training expert in Los Angeles. “It’s a tragedy.”

(Adapted with permission from Investor’s Business Daily, April 24, 1998)