

My students know that I don't give multiple guess tests. They know that the information memorized for these kinds of tests doesn't stay with them. It is retained in the limbic system and soon disappears. Marion Brady states it well in his most recent article: Mr. Brady is a former educator and writer from Central Florida.

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Remember Richard Feynman? Free spirit? Drummer? Adventurer? Teller of funny stories? Artist? Expert safe cracker? Writer? College professor? Translator of Mayan hieroglyphics? Member of the team that developed the atomic bomb? Major contributor to the theory of quantum electrodynamics? Winner of the Nobel Prize in Physics in 1965?

Remember him? Sure you do! He's the one who dropped an O-ring into a glass of ice water to show the other members of the committee investigating the Challenger explosion that the rings got brittle and could fail when they were cold.

He died in 1988. "I'd hate to die twice," he said from his hospital bed. "It's so boring."

Feynman loved teaching. He said it helped him think more clearly. He also thought he had a moral obligation to explain very complicated things using the simplest possible language.

What made him a master teacher, however, wasn't just his words, but his use of what teachers call "hands on" activities.

Feynman wrote a stack of serious books with titles like Elementary Particles and the Laws of Physics and Einstein's Relativity, Symmetry and Space-Time. He also, however, wrote several not-so-serious books of personal experience, and it's from one of these-Surely You're Joking, Mr. Feynman!-that I want to pull a rather long quote.

He's thinking back to teaching at a university in Brazil, in a building looking down on a bay. He's remembering handing out Polaroid strips to students and having to encourage them to actually use them to look at sunlight reflecting off the water. He follows that with five additional pages of examples of what he saw as the major teaching and learning problem in higher education in Brazil.

"...I attended a lecture at the engineering school. The lecture went like this, translated into English: 'Two bodies ... are considered equivalent ... if equal torques ... will produce ... equal acceleration.'

"The students were all sitting there taking dictation, and when the professor repeated the sentence, they checked it to make sure they wrote it down all

right. Then they wrote down the next sentence, and on and on. I was the only one who knew the professor was talking about objects with the same moment of inertia, and it was hard to figure out.

"I didn't see how they were going to learn anything from that. Here he was talking about moments of inertia, but there was no discussion about how hard it is to push a door open when you put heavy weights on the outside, compared to when you put them near the hinge-nothing!

"After the lecture, I talked to a student: 'You take all those notes-what do you do with them?'

"'Oh, we study them,' he says. 'We'll have an exam.'

"'What will the exam be like?'

"'Very easy. I can tell you now one of the questions.' He looks at his notebook and says, 'When are two bodies equivalent?' And the answer is, 'Two bodies are considered equivalent if equal torques will produce equal acceleration.'

"So, you see, they could pass the examinations, and 'learn' all this stuff, and not know anything at all....."

True in Brazil. True in America. True in schools around the world. Student ability to merely remember and parrot back words from textbooks or lectures is mistaken for genuine learning.

The main reason why "hands on" teaching is much rarer than "talking heads" teaching is that it's traditional. Teachers tend to teach as they were taught. And the main reason "talking head" teaching continues is standardized testing. (Be clear about this. Not "testing," but "STANDARDIZED testing.")

Here, in three short sentences, is why No Child Left Behind is dumbing down America's kids: 1. Teachers always teach to the test. 2. Under NCLB, the only tests that count are standardized and machine scored rather than teacher created and scored. 3. Machines can't evaluate and attach a number to complex thought processes, so complex thought processes don't get taught.

Feynman, wanting to teach about moments of inertia, would probably have just brought to class a bag of bricks with a way to hook it to the top of a door, and told his students to get started figuring out the forces involved in moving the door depending on where the bricks were hung.

And he would surely have considered what he learned from quietly watching and listening to them experiment and talk about the task a far better indicator of levels of understanding than anything he could find out from a multiple choice, paper and pencil, standardized test.

Generations come and go, education reform fads come and go, education

gurus come and go, critics come and go, but faith in teacher talk, textbooks, and standardized tests goes on forever. You'd think that how little most adults remember of what they once heard or read in school, compared to how much they remember of what teachers made them figure out for themselves, would lessen public resistance to learning by doing.