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Illinois is moving to change dramatically what students learn in science, but it's not the first time.

A decades-old push by the science community persuaded dozens of Illinois high schools to offer physics to freshmen in the past several years — a radical shift because physics typically is taken by upperclassmen with advanced math skills.

How did that experiment pan out? Based on the numbers, not so well.

Last year, less than 3 percent of ninth-graders in Illinois public schools took physics in their freshman year, according to new state data on high school course work released to the Tribune.

And the vast majority of public high schools balked at inverting the long-standing order of science courses, the records show. Historically, the order has been biology, chemistry, physics.

Educators attribute the small numbers to a shortage of physics teachers, concerns about the rigor of freshman-level physics, and resistance from educators and parents.

"We are trying to change 100 years of culture in the way we've taught science," said Corinne Williams, an assistant superintendent who has pushed the freshman physics program in all four high schools in Bremen High School District 228. "It is not an easy task."

What's happened with physics illustrates the difficulty of bucking science tradition, and it foreshadows the challenges that lie ahead for Illinois and 25 other states in an effort to overhaul science standards in public schools.

The push to teach physics ahead of biology and chemistry emerged in the 1990s in Illinois, championed by physicist Leon Lederman, a Nobel laureate who was a founder of the Illinois Mathematics and Science Academy and a former director at the Fermilab in Batavia.

The idea was that traditional sequence of courses — biology, chemistry and then physics — had been in place since the late 1800s, though science was changing. To understand modern chemistry and biology,

students needed to understand physics concepts. That launched the so-called Physics First movement.

State data show that about 4,500 ninth-graders took freshman physics in the 2010-11 and 2011-12 school years, about 2.7 percent of all ninth-graders statewide.

The largest numbers of freshmen taking physics tended to be in affluent areas, such as Deerfield, Highland Park, Northfield and Hinsdale schools, or at selective and specialty schools in Chicago, the data show.

Nationally, about 6 percent of ninth-graders took a Physics First class in 2008-09, according to the most recent data collected by the American Institute of Physics. That percentage includes public and private school students.

— *Diane Rado*