



## **FRANKLIN STANDARDS: A BETTER STANDARD**

### **WHAT MAKES THE FRANKLIN STANDARDS DIFFERENT?**

The *Franklin Standards* draws upon several sources, most importantly the [Massachusetts Science and Technology/Engineering Curriculum Framework](#) (2006) and New York’s [Science Learning Standards](#) (1996). The *Franklin Standards*’ Expert Committee substantially revised the *Franklin Standards* from these sources. The *Franklin Standards* possesses several distinct virtues, both drawn from these sources and as a result of its revision process.

### **CONTENT-RICH KNOWLEDGE**

The *Franklin Standards* provides a content-rich summary of required science knowledge, with equal standards for every student, so as to restore a culture of high expectations. It includes the core disciplines of Physical Sciences (Chemistry and Physics), Life Sciences (Biology), and Earth and Space Sciences, as well as Technology and Engineering, History of Science, and Scientific Inquiry. It provides rich standards so that teachers do not compromise on content and focuses on lucid statements of scientific knowledge that every citizen should know.

### **CLEAR FORMAT**

The *Franklin Standards* emphasizes clarity far more than rival science standards. We have eliminated the tangle of skills and crosswalks and concentrated on facts to learn, presented in a simple list of factual items. The *Franklin Standards*’ straightforward structure makes it easy for teachers to use and easy for parents to hold teachers accountable for how well they teach science. We expect the states and school districts to modify the sequence we offer—but they can do so knowing with absolute clarity what is the total science education we believe they should provide.

### **DEPOLITICIZED**

The *Franklin Standards* removes the low standards imposed by the [Next Generation Science Standards](#) and similar standards in the name of “diversity, equity, and inclusion,” politicization, and the conflation of scientific inquiry and activism. It provides full and excellent science instruction in part by using materials produced before a hyper-politicized generation came to the fore in the education establishment and in part by updating its content to incorporate current scientific knowledge.

## **HISTORY OF SCIENCE**

The *Franklin Standards* restores History of Science to state standards. Science instruction can be enriched by the history of scientific discovery, by helping both teachers and students to learn how we came to know what we know about the natural world. Learning the history of scientific discovery will help teachers plan the sequence of science instruction and the choice of laboratory experiments and field exercises. The history of science also helps students learn about how scientific debate works and may inspire them to choose careers in science.

## **TECHNOLOGY AND ENGINEERING**

The *Franklin Standards* provides Technology and Engineering standards to allow states and schools districts to include dedicated coverage of the practical application of science (engineering) and an understanding of the current state of applied science (technology). This instruction should augment but not replace core science instruction.

## **SCIENTIFIC INQUIRY**

The *Franklin Standards* provides Scientific Inquiry standards, divided into three parts. The first section, which applies to all K-12 science education, includes Scientific Knowledge, Scientific Reasoning, Limitations of Scientific Knowledge, and Scientific Habits and Character. The second section consists of sequences within each individual K-12 standard, which replaces “Skills” and “Practices.” The third section provides further sequences equivalent to “Skills” and “Practices,” which apply to all four high school science standards.

## **SUPPORTS CONTENT-RICH MATHEMATICS STANDARDS**

Science education that prepares students for college and career requires substantial mathematical content knowledge. The *Franklin Standards* have been crafted to complement Mathematics standards that will provide that knowledge—above all, Mathematics standards keyed to provide Algebra I in Grade 8. The *Franklin Standards* will provide content to match existing reformed Mathematics standards and will provide a benchmark for states that intend to reform their Mathematics standards.

## **DISTINGUISHES BETWEEN THEORY AND FACT**

The *Franklin Standards* emphasizes that science is never settled, but is always subject to testing and revision, and should never be decided by authority or a consensus. Science education should help students acquire the scientific habit of subjecting theory to continued critical evaluation by learning early that even the most well-supported theories *are* theories, and not facts. The *Franklin Standards* revises much of the content of the best previous standards to make these distinctions and aims clear.

## **RESTORES THE CENTRALITY OF THE SCIENTIFIC METHOD**

The *Franklin Standards* focuses on *scientific methodology*, which includes what is normally taught as *the scientific method* (hypothesis, test, experiment), but which accounts also for the broader range of methods scientists use for scientific exploration of nature. This goes against the grain of current science education, which asserts that *multiple ways of knowing* stand on an equal footing with *scientific knowledge*. The *Franklin Standards* teaches students about the unique nature of scientific methodology as an essential component of the nature of science.

## **SCIENTIFIC HABITS AND CHARACTER**

The *Franklin Standards* focuses on scientific habits and character. Scientists accept that what they believe they know is ultimately provisional, and that they should accept correction of what they scientifically know when new evidence comes to light. This is the original “critical thinking,” which emphasizes the mutuality of criticism, and the willingness to subject oneself to criticism as much as the ability to criticize others. Scientific character encourages a spirit of humility and charity among scientists both in their dealings with one another and with the larger public.

## **FOSTERS CURIOSITY**

Students are naturally curious and standards should support teachers’ work to cultivate the disciplined and informed curiosity that is the hallmark of scientific inquiry and its distinctive way of understanding and improving the world. The *Franklin Standards* urges states, school districts, charter schools, private schools, home schools, teachers, and parents to reserve substantial portions of science instruction time to cultivate students’ curiosity.

## **BROAD APPEAL**

The *Franklin Standards* has been designed to appeal to a broad majority of Americans. We chose the [Massachusetts Science and Technology/Engineering Curriculum Framework](#) (2006) and New York’s [Science Learning Standards](#) (1996) as our models. We have revised the *Franklin Standards* so that it will also provide science standards that satisfy more conservative Americans, but our sources framework passed muster in Massachusetts and New York. The *Franklin Standards* should provide a broadly appealing and broadly acceptable model for science standards.

## **FLEXIBILITY**

The *Franklin Standards* is designed so that states and school districts can alter the sequence as they see fit. States and school districts can create equally rigorous standards by abbreviating some topics, expanding others, or adjusting the course sequences. States and school districts that adjust the course sequence can make age-appropriate adjustment to the learning standards.



## TEACHER FREEDOM

The *Franklin Standards* does not provide an entire curriculum. Teachers are free to teach each topic as they see fit, to add new topics, to incorporate independent lesson plans and sequences, and to unite items from these learning standards into thematic units. They also are free to reorganize the sequence in which they teach these topics, as well as to review material from earlier grades in any course of instruction.

## TEACHER EDUCATION

The content-rich *Franklin Standards* makes clear what teachers should be expected to know, and what state education departments can expect of teachers. The *Franklin Standards* outlines what teachers should learn, whether in college, graduate school, or professional development. It also helps teachers to arrange content so that it builds coherently over several years, and to know what is appropriate for each grade level.

## RELIABLE ASSESSMENT

The *Franklin Standards*' intensive content standards facilitate reliable assessment, whether by national companies such as the Educational Testing Service (ETS), state-level testing, or tests by school districts and individual teachers. Its content standards provide enough material to make it easy both for teachers and for large organizations such as ETS to create tests that accurately assess student knowledge.

## INTENSIVE FOUNDATIONAL KNOWLEDGE

The *Franklin Standards* are intended to boost science knowledge of all students and are not intended to substitute for early college classes, such as dual credit (taught in high school) and dual enrollment (taught in college) courses in advanced science. We encourage ambitious and qualified students to take early college courses, the better to stimulate their love of science and prepare them for college and career. But the *Franklin Standards* provides self-sufficient science standards for all students, which early college classes may supplement but not replace.

## SCIENCE FOR ALL AMERICANS

Some educators argue that schools should limit content instruction, even though a large body of scholarship has shown their arguments are misguided. Content standards that focus on “skills” and abbreviate content especially harm the education of disadvantaged students, and thereby foster an unequal society. When disadvantaged students receive intensive content instruction, they learn eagerly and well. The *Franklin Standards* offers comprehensive content knowledge to ensure that America's schools fulfill the promise of equal educational opportunities for everyone.



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