

artifacts to solve real-world problems. Educators and students can challenge implicit bias, stereotypes about computer science, and narrow perspectives while learning about core concepts like networks and security, data analysis, and impacts of computing because the cross-cutting themes of equity and inclusion are embedded in the framework.

## **Computer Science K–12 Learning Standards**

The 2015 Washington State Legislature required the adoption of nationally-recognized computer science standards. The enactment of this law coincided with the development of a national computer science framework by K12CS.org. The Computer Science K–12 Learning Standards reflect the recommendations of the K–12 Computer Science Framework, led by the Association for Computing Machinery, Code.org, Computer Science Teachers Association, Cyber Innovation Center, and National Math and Science Initiative in partnership with states and districts. The K–12 Computer Science Framework is endorsed by leading industry and educational organizations as well as K–12, higher education, and research leaders in the field of computer science education.

The standards are meant to establish a baseline literacy in computer science for all students and provide guidance for designing curriculum, assessments, and teacher preparation programs. It consists of five core concepts and seven core practices, as listed:

### **Core Concepts**

1. Computing Systems
2. Networks and the Internet
3. Data and Analysis
4. Algorithms and Programming
5. Impacts of Computing

### **Core Practices**

1. Fostering an Inclusive and Diverse Computing Culture
2. Collaborating
3. Recognizing and Defining Computational Problems
4. Developing and Using Abstractions
5. Creating Computational Artifacts
6. Testing and Refining
7. Communicating

The Computer Science K–12 Learning Standards and connected framework represent a vision in which all students, from a young age, engage in the concepts and practices of computer science to understand a world that is increasingly influenced by technology and to apply computing as a tool for learning and expression in a variety of disciplines and interests. From kindergarten through 12th grade, students will develop new approaches to problem solving that harness the power of computational thinking, while not only becoming users, but creators of computing technology.

Computer science also has strong connections to other disciplines, and is becoming increasingly important in the workplace. Many problems in science, engineering, health care, business, and other areas can

be solved effectively with computers, but finding a solution requires both computer science expertise and knowledge of the particular application domain. Thus, computer scientists need to understand and often become proficient in other subjects.

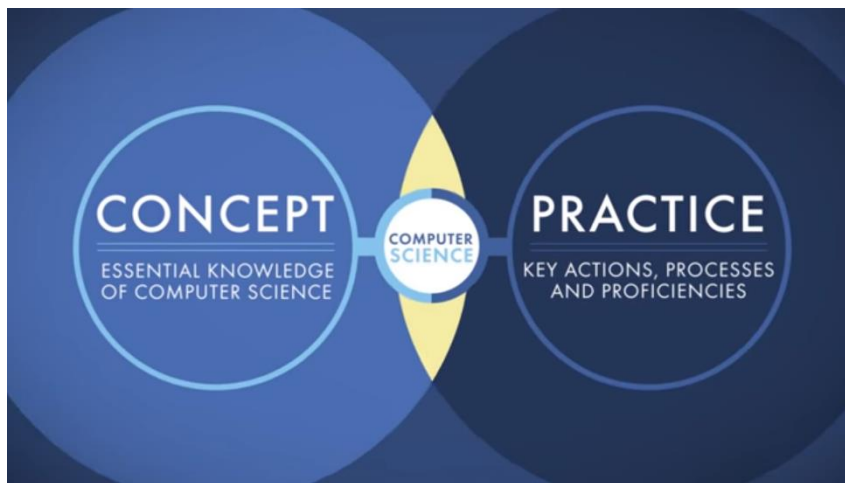


Figure 1: Relationship between Framework Concepts and Practices.  
Graphic from K–12 Computer Science Framework video. YouTube: <https://youtu.be/CD0EIGfr950>

## Goal of the Standards

The Computer Science K–12 Learning Standards are based on the Computer Science Teachers Association’s K–12 Computer Science Standards, and define a set of standards that are supported by the K–12 Framework. The framework suggests steps that will be needed to enable their wide implementation. The standards introduce the principles and methodologies of computer science to all students, whether they are college bound or career bound after high school. The standards outlined in this document address the entire K–12 range. They complement existing K–12 computer science and information technology curricula where they are already established, especially the advanced placement (AP) computer science curricula (AP, 2010). Additionally, the standards complement existing curricula in other disciplines.

*... the office of the superintendent of public instruction shall adopt computer science learning standards developed by a nationally recognized computer science education organization.*

*-SHB 1813 (2015)*