*“All students in the 21st century need to have the opportunity to learn coding starting in elementary school. It is exciting for kids and introduces them to thinking skills that are critical for the digital age and that promote the study of computer science. “*

Esther Wojcicki

Vice Chair, Creative Commons Board of Directors

# Vision

***The abilities to effectively use and create technology to solve complex problems are the new and essential literacy skills of the twenty-first century.***

# Overview

The Digital Literacy and Computer Science (DLCS) skills and knowledge articulate critical learning outcomes for Kindergarten through Grade 12 to help prepare students for success in world. The standards represent the core elements of digital literacy and computer science and are intended to drive coherent, rigorous instruction which results in the mastery and application of digital literacy and computer science knowledge, reasoning, and skills.

The purpose of this document is to introduce educators to the DLCS Framework by providing a general overview of the key skills and knowledge in Kindergarten to Grade 2.

# DLCS Skills and Knowledge

Early elementary school students are introduced to foundational concepts by integrating basic digital literacy skills with simple ideas about computational thinking. They learn that tools help people do things better, or more easily, or do some things that could otherwise not be done at all. Through the exploration of differences between humans, computing devices, and digital tools, students begin to understand if, when, and how they should use technology.

Kindergarten through grade 2 standards integrate all seven practices. Standards in this grade span ask students to demonstrate the ability to:

Computing and Society (CAS)

* Understand basic safety and security concepts and basic understanding of safe information sharing.
* Explore what is means to be a good digital citizen.
* Observe and describe how people use technology and how technology can influence people.

Digital Tools and Collaboration (DTC)

* Develop basic use of digital tools and research skills to create simple artifacts.
* Develop basic use of digital tools to communicate or exchange information.

Computing Systems (CS)

* Understand that computing devices take many forms and have different components.
* Consider basic structures of computing systems and networks.
* Explore human and computer differences to determine when technology is beneficial.

Computational Thinking (CT)

* Explore abstraction through identification of common attributes.
* Create and enact a simple algorithm.
* Understand how information can be collected, used, and presented with computing devices or digital tools.
* Create a simple computer “program.”
* Use basic models and simulations.

Students in this grade span develop concepts through exploration, discovery, and creativity with the guidance, support, and encouragement of their educator. They design, build, and test inventions and solutions through exploration and play. The standards are designed with a focus on active learning, creativity, and exploration. Standards for the earliest grade span allow teacher flexibility in deciding when students are ready to use technology. Basic technology skills may be learned through the use of manipulatives, pencil-and-paper, and other manual methods through which children acquire basic skills. Many skills introduced in this grade span will be further developed in later grade spans.

**Resources**

DLCS Resources – <http://www.doe.mass.edu/stem/dlcs/>

STEM Resources - <http://www.doe.mass.edu/stem/>