

Reading Public Schools

Instilling a joy of learning and inspiring the innovative leaders of tomorrow



Digital Literacy and Computer Science Curriculum Guide

Grade 6 - 8

Curriculum Description

"Digital Literacy and Computer Science knowledge, reasoning and skills are essential both to prepare students for personal and civic efficacy in the twenty-first century and to prepare and inspire a much larger and more diverse number of students to pursue the innovative and creative careers of the future. The abilities to effectively use and create technology to solve complex problems are the new and essential literacy skills of the twenty-first century."

-2016 Massachusetts Digital Literacy and Computer Science Curriculum Framework

During the middle school years students will have opportunities to engage in enrichment and elective courses that will develop students' skills to think critically, reason logically, solve problems, and effectively use technology to create and adapt new technologies. Developing these skills will empower students in all disciplines.

Core Practices

- **Creating:** Digital literacy and computer science are disciplines in which students demonstrate creative thinking, construct knowledge, and develop innovative artifacts and processes using technology. Students engage in the creative aspects of computing by designing and developing interesting computational artifacts and by applying techniques to creatively solve problems.
- **Connecting:** Developments in computing have far-reaching effects on society and have led to significant innovations. The developments have implications for individuals, society, commercial markets, and innovation. Students study their effects and draw connections between different computing concepts.
- **Abstracting:** Computational thinking requires understanding and applying abstraction at multiple levels. Students use abstraction to develop models and to classify and manage information.
- **Analyzing:** Students use critical thinking and analytical skills to locate, evaluate, and analyze information, information sources, their own computational artifacts, and the computational artifacts others have produced.
- **Communicating:** Communication is the expression and exchange of information between two or more people. Communication includes written and oral mediums, as well as tangible representations supported by graphs, visualizations, demonstrations, stories, and analysis. Effective communication is accurate, clear, concise, persuasive, and responsible.
- **Collaborating:** People working collaboratively in teams, locally or globally, can often achieve more than individuals working alone. Effective collaboration draws on diverse perspectives, skills, knowledge, and dispositions to address complex and open-ended problems or goals.
- **Researching:** Students apply digital tools to gather, evaluate, and use information in a legal, safe, and ethical manner.

Content Standards

Computing and Society (CAS):

- Understand safety and security concepts, online identity and privacy, and how to deal with cyberbullying and inappropriate content.
- Demonstrate responsible use of technology and laws regarding ownership of material/ideas, licensing, and fair use.
- Understand consequences of inappropriate technology use, including harassment and sexting.
- Examine the impact of emerging technology in schools, communities, and societies.
- Evaluate digital media bias and messaging.

Digital Tools and Collaborating (DTC):

- Use a variety of digital tools to create artifacts, online content, and online surveys.
- Understand that different digital tools have different uses.
- Communicate and publish online.
- Advance research skills.

Computing Systems (CS):

- Understand hardware and software components of a computing device; troubleshoot hardware and software problems.
- Use a variety of computing devices to manipulate data.
- Differentiate tasks/problems best solved by computing systems or by humans.
- Understand that network components carry out specific functions to connect computing devices, people, and services.
- Understand the capabilities services can provide.

Computational thinking (CT):

- Create a new representation, define functions, and use decomposition.
- Write, debug, and analyze advanced algorithms and basic programs.
- Understand how computing devices represent and manipulate information.
- Create, modify, and manipulate databases.
- Use a variety of data collection devices.

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Curriculum Guide Overview

Curriculum Guide	Curriculum guides are public documents aligned with the Massachusetts Department of Education Curriculum Frameworks. They focus on the set of standards that students will learn within certain disciplines at appropriate grade levels. Each area of the curriculum is divided into general strands (broad categories) under which the standards fall. When we discuss “standards-based education” we mean that students are measured against their proficiency and growth towards meeting these standards. Curriculum Guides are intended for teachers, parents, and the wider school community as an overview document of the course of study for the year.
Curriculum Map	Curriculum maps are internal documents utilized as planning tools for teachers. Curriculum maps keep a focus on the end-of-year standards and chart a course for the teaching and learning over the year. They are typically organized in a grade-level overview organized by month or marking period. Curriculum maps typically include; standards and expectations for the grade/content, essential skills/ concepts, methods of assessment, and major content resources. Maps are never “done” as ongoing work of educators include revisions, additions, and revisits to the maps. They provide an overview for the year while also allowing educators to see a vertical picture of how the content develops as students progress through each grade.
Standards	The standards used as the foundation of our curriculum come directly from the Massachusetts Department of Education Curriculum Frameworks. State standards may be viewed here: http://www.doe.mass.edu/frameworks/
Priority Areas	Priority areas are defined by the state of Massachusetts as the most critical areas in each grade level on which instructional time should focus.
Content Standards	The Content Standards describe what students should know and be able to do once within the area of mathematics.
Essential Questions	Essential questions are questions that are not answerable with an easy answer or a simple instruction. The purpose of essential questions is to provide opportunities for inquiry into the learning and act as an umbrella to anchor the unit/lesson.
Resources	Resources identified in Curriculum Guides are not intended to be exhaustive, nor are they intended to be prescriptive. The resources identified may function as a menu of curriculum resources from which educators identify the most appropriate tools to utilized in their classrooms. More specifics about identified resources are identified within the curriculum map documents.