

# EDUCATIONAL TECHNOLOGY STANDARD



## K-12 MEASUREMENT TOPICS & BENCHMARKS

Catalina Foothills School District  
Tucson, Arizona  
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## **K-12 Educational Technology Standard**

The Catalina Foothills School District (CFSD) Educational Technology Standard is based on the Arizona Educational Technology Standard, which was approved by the State Board of Education on May 18, 2009. The state approved standard was reformatted into the CFSD curricular framework to delineate measurement topics and benchmarks similar to other curricular areas. A committee of educators from across the district worked together during the 2009-10 school year to correlate the measurement topics and benchmarks from the CFSD Educational Technology Standard to the content areas of English/Language Arts, Social Studies, Science, and Mathematics. In addition, they aligned the technology and content area benchmarks to CFSD software applications, hardware/tools, and identified strategies or activities as options for integrating technology in the learning process to prepare students well for the 21<sup>st</sup> century.

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# CATALINA FOOTHILLS SCHOOL DISTRICT EDUCATIONAL TECHNOLOGY STANDARD

## INTRODUCTION

In order to ensure that all students have the skills and capacity to solve the complex problems facing society today and in the future, this Educational Technology Standard guides efforts to enhance student learning through the integration of technology and academics. It also provides a framework that supports the learning process.

Organizations such as the Partnership for 21st Century Skills, the American Library Association (ALA), and International Society for Technology in Education (ISTE) have identified the skills and habits of the mind that students need to thrive in the new economy and solve the complex problems facing our society. Research in cognitive science is finding that the ability of a learner to demonstrate these skills is enhanced by the use of existing and emerging technologies.

The Catalina Foothills School District recognizes this shift from technology being a supplemental topic, taught only in the computer lab, to technology supporting all learning. Keeping this shift in mind, the standard and the accompanying benchmarks have been written with the intention that they be taught within the content standards and they should not be considered as isolated benchmarks to be taught in a vacuum.

"Teachers must become comfortable as co-learners with their students and with colleagues around the world. Today it is less about *staying ahead* and more about *moving ahead* as members of dynamic learning communities. The digital-age teaching professional must demonstrate a vision of technology infusion and develop the technology skills of others. These are the hallmarks of the new education leader." *Don Knezek, ISTE CEO, 2008*

The need for students to understand and use a variety of digital strategies in multiple contextual situations has never been greater. The use of multiple technologies continues to increase in all aspects of everyday life, in the workplace, in scientific and technical communities. Today's changing world will offer enhanced opportunities and options for those who thoroughly understand and are able to use technology effectively. The Catalina Foothills School District Educational Technology Standard, aligned to the Arizona Technology Standard and CFSD's Framework on 21<sup>st</sup> Century Skills, is articulated to facilitate this vision.

## RATIONALE

The use of technology is altering the way that teachers are teaching and students are learning. CFSD students must have regular opportunities to use these tools to develop skills that encourage creativity and innovation, communication and collaboration, research and information fluency, critical thinking, problem solving and decision-making, digital citizenship, and personal productivity in the classroom and in daily life. Once these skills are obtained, students will be on the road to becoming lifelong learners and contributing members of a global technological society.

## ORGANIZATION OF THE EDUCATIONAL TECHNOLOGY STANDARD

The Educational Technology Standard, articulated by grade level, is divided into six measurement topics:

- Creativity and Innovation
- Communication and Collaboration
- Research and Information Literacy
- Critical Thinking, Problem Solving and Decision Making
- Digital Citizenship
- Technology Operations and Concepts

Each measurement topic is focused on essential concepts that broadly define the skills and knowledge that students are expected to know and be able to do. Benchmarks specifically delineate the ideas and skills to be taught and learned. These rigorous benchmarks, organized by measurement topics, are the intended results we envision for our 21<sup>st</sup> century graduates. Students make continuous progress toward meeting the standard at each grade level.

This organization does not imply that the teaching and learning of the educational technology standard should be fragmented or compartmentalized. Educational technology is a highly interconnected discipline; ideas from all six measurement topics need to be continuously integrated as needed to make meaning and connections to other content areas, concepts, and benchmarks.

The order of the measurement topics and benchmarks in the Educational Technology Standard document are not intended to be a checklist for instruction. Concepts develop with a spiraling of ideas/skills that are interconnected and dependent on each other, and this is reflected in the standard document. Effective instruction often incorporates several benchmarks into an integrated experience of learning for the student.

The measurement topics and benchmarks have been coded so that the district can easily refer to them in curriculum, instruction, assessment, and professional development activities. The numbering system begins with the subject area/course. Educational Technology is assigned the code “ET”. The first numeral in the code indicates the grade level. The second numeral identifies the measurement topic. The last numeral indicates the benchmark.

New to the Educational Technology Standard is the alignment of CFSD resources and tools (e.g., hardware, software applications, online subscriptions), and strategies and activities to the measurement topics and benchmarks for English/Language Arts, Math, Science, and Social Studies at each grade level. The format of these additional documents will support the implementation of the Educational Technology Standard. They serve only as examples to provide teachers in CFSD with various options for integrating technology to increase student achievement and technological literacy. The supporting content area documents are color-coded as follows: Red – correlation of content area benchmarks to Educational Technology benchmarks; Blue – CFSD software applications; Green – CFSD hardware/tools; Purple – Suggested strategies and activities.

## **MEASUREMENT TOPICS AND ESSENTIAL CONCEPTS DEFINED**

### **1: Creativity and Innovation**

This measurement topic requires that students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

- Knowledge and Ideas: Use technology to generate knowledge and new ideas.
- Models and Simulations: Use digital models and simulations to examine real-world connections, explore complex systems and issues, and enhance understanding.
- Trends and Possibilities: Use technology to forecast trends and possibilities.
- Original Works: Use technology to create original works in innovative ways.

### **2: Communication and Collaboration**

This measurement topic requires students to use digital media and environments to communicate and collaborate with others.

- Effective Communications and Digital Interactions: Communicate and collaborate with others employing a variety of digital environments and media.
- Digital Solutions: Contribute to project teams to produce original works or solve problems.
- Global Connections: Create cultural understanding and global awareness by interacting with learners of other cultures.

### **3: Research and Information Literacy**

This measurement topic requires that students apply digital tools to gather, evaluate, and use information.

- Planning: Plan strategies to guide inquiry.
- Processing: Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.

### **4: Critical Thinking, Problem Solving, and Decision Making**

This measurement topic requires students to use critical thinking, problem solving, and decision making to manage projects using digital tools and resources.

- Investigation: Identify and define authentic problems and significant questions for investigations.
- Exploring Solutions: Plan and manage activities to develop solutions to answer a question or complete a project.

### **5: Digital Citizenship**

This measurement topic requires students to understand human, cultural, and societal issues related to technology practice and ethical behavior.

- Safety and Ethics: Advocate and practice safe, legal, and responsible use of information and technology.

- Leadership for Digital Citizenship: Demonstrate leadership for digital citizenship.
- Impact of Technology: Develop an understanding of cultural, historical, economic, and political impact of technology on individuals and society.

## **6: Technology Operations and Concepts**

This measurement topic requires students to demonstrate a sound understanding of technology concepts, systems, and operations.

- Understanding: Recognize, define, and use technology processes, systems, and applications.
- Applications: Select and use applications effectively and productively.
- Problem Solving: Define problems and investigate solutions in systems and processes.
- Transfer of Knowledge: Transfer current knowledge to learning of new technologies.