Boulder Valley School District Technology
– An Introduction to The Curriculum Essentials Document

Background

This BVSD Curriculum Essentials Document incorporates the International Society for Technology in Education’s (ISTE) National Educational Technology Standards for Students (NETS) and the integrated essentials from the Colorado Academic Standards for 21st Century Learning Skills.

The NETS for Students from ISTE do not delineate how courses should be created or taught. Each teacher must determine appropriate lesson planning. As technology rapidly evolves with new dynamic tools, there is no set of prescribed software, tools, or technologies that students and teachers may adopt to achieve these rigorous and robust standards. It is with experience, trust, and teacher consensus in ISTE that the Technology Teachers and Educational Technology Department at BVSD adopted these same NETS for our Boulder Valley students. The writing teams took the ISTE NETS for Students and carefully and thoughtfully divided them into courses for the creation of the 2011 BVSD Educational Technology Curriculum Essentials Documents (CED).

The ISTE 2007 Standards

The expectations in these documents are based on mastery of the topics at specific grade levels with the understanding that the standards, themes and big ideas reoccur throughout PK-12 at varying degrees of difficulty, requiring different levels of mastery. The Standards are:

1. Creativity and Innovation
   Students demonstrate creative thinking, construct knowledge, and develop innovative products and process using technology.
   Students:
   a. Apply existing knowledge to generate new ideas, products, and processes
   b. Create original works as a means of personal or group expressions
   c. Use models and simulations to explore complex systems and issues
   d. Identify trends and forecast possibilities

2. Communication and Collaboration
   Students use digital media and environments to communicate and work collaboratively to support individual learning and contribute to the learning of others. Students:
   a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media
   b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats
   c. Develop cultural understanding and global awareness by engaging with learners of other cultures
   d. Contribute to project teams to produce original works or solve problems

3. Research and Information Fluency
   Students apply digital tools to gather, evaluate, and use information. Students:
   a. Plan strategies to guide inquiry
   b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
   c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks
   d. Process data and report results

4. Critical Thinking, Problem Solving, and Decision Making
   Students use critical thinking skills to plan and conduct research, manage projects, solve problems and make informed decisions using appropriate digital tools and resources. Students:
   a. Identify and define authentic problems and significant questions for investigation
   b. Plan and manage activities to develop a solution or complete a project
   c. Collect and analyze data to identify solutions and/or make informed decisions
   d. Use multiple processes and diverse perspectives to explore alternative solutions

5. Digital Citizenship
Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:
   a. Advocate and practice safe, legal, and responsible use of information and technology
   b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
   c. Demonstrate personal responsibility for lifelong learning
   d. Exhibit leadership for digital citizenship

6. Technology Operations and Concepts
Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:
   a. Understand and use technology systems
   b. Select and use applications effectively and productively
   c. Troubleshoot systems and applications
   d. Transfer current knowledge to learning of new technologies

Components of the Curriculum Essentials Document
The CED for each grade level and course include the following:
- An At-A-Glance page containing:
  o approximately ten key skills or topics that students will master during the year
  o the general big ideas of the grade/course
  o the Standards of Technology Practices
  o assessment tools allow teachers to continuously monitor student progress for planning and pacing needs
  o Description of Technology at that level
- The Grade Level Expectations (GLE) pages.
- The Grade Level Glossary of Academic Terms lists all of the terms with which teachers should be familiar and comfortable using during instruction. It is not a comprehensive list of vocabulary for student use.
# Computer Power Overview

## Course Description

This 7th and 8th grade class builds upon the basic skills mastered in Exploring Computers by introducing new applications and adding more advanced uses of the basics. Students who did not complete the Exploring Computers class may need to complete assignments that allow them to master these skills before moving on to the projects in Computer Power, including keyboarding with both hands at 20 words per minute, as well as basic computer operation and Internet use.

## Topics at a Glance

- Basic operations and concepts
- Technology productivity tools
- Technology research tools Environment
- Digital Photography
- Animations
- Web Page Development
- Social, ethical, and human issues
- Using advanced technology for communications tools
- Technology problem-solving and decision-making tools
- Programming
- Movie Creation
- Keyboarding Reinforcement

## Assessments

Assessments in this course involve projects, tests, quizzes and practical application assignments.

This course requires graduates to use technology for the development of innovative projects as well as demonstrate the production of creative outcomes. Achieving these goals may be reached by a variety of projects and/or programs. Use of specific programs names were deliberately not mentioned due to some schools using different software.

## Standards:

The National Education Technology Standards (NETS) for Students were developed in 1998 and updated in 2007 by ISTE, the International Society for Technology in Education.

1. Creativity and innovation
2. Communication and Collaboration
3. Research and Information Fluency
4. Critical Thinking, Problem Solving, and Decision Making
5. Digital Citizenship
6. Technology Operations and Concepts
## Content Area: Technology - Middle Level Computer Power

### Standards

**Standard Two: Communication & Collaboration**

**Standard Six: Technology Operations & Concepts**

### Prepared Graduates:

- Students demonstrate creative thinking, construct knowledge and develop innovative products and processes using technology
- Students demonstrate a sound understanding of technology concepts, systems and operations.

### Grade-Level Expectation

**Concepts and skills students master:**

1. Students use technology tools to enhance learning, increase productivity, and promote creativity.
2. Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.
3. Students use telecommunications to collaborate, publish and interact with peers, experts and other audiences.
4. Students use tools for writing and publication.

### Evidence Outcomes | 21st Century Skills & Readiness Competencies

**Students can:**

| a. Create business documents: memos, newsletters, agendas, business letters, tables, lists |
| b. Employ mail merge |
| c. Create documents and labels |
| d. Create projects for other classes: outlines, notes, reports, time lines, vocabulary lists, outlines |
| e. Produce desktop publishing projects: newsletters, flyers, brochures, posters |

**Inquiry Questions:**

1. What are the peripherals for computers?
2. How can technical computer problems be solved?
3. What terminology is used for computers?

**Relevance and Application:**

1. A computer is a necessary tool for a 21st century graduate.
2. Creating documents and other publications using a computer is a necessary skill.

**Nature of Discipline:**

Using the computer to create publishable documents is a necessary 21st century skill.

Note: All writing in this course will emphasize language mechanics, writing techniques, and the 6 Traits+1 writing process.
## Content Area: Technology - Middle Level Computer Power

### Standards
- **Standard Three: Research and Information Fluency**
- **Standard Six: Technology Operations and Concepts**

### Prepared Graduates:
- Students apply digital tools to gather, evaluate and use information
- Students demonstrate a sound understanding of technology concepts, systems and operations

### Grade-Level Expectation

#### Concepts and skills students master:
1. Students use technology to locate, evaluate, and collect information from a variety of sources.
2. Students use technology tools to process data and report results.
3. Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.

<table>
<thead>
<tr>
<th>Evidence Outcomes</th>
<th>21st Century Skills &amp; Readiness Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students can:</td>
<td></td>
</tr>
<tr>
<td>a. Cite an electronic encyclopedia and web site</td>
<td></td>
</tr>
<tr>
<td>b. Evaluate a web site for accuracy of content based on author, date, publisher, purpose, and sources cited</td>
<td></td>
</tr>
<tr>
<td>c. Appraise web-based bookmarks for organization</td>
<td></td>
</tr>
<tr>
<td>d. Perform advanced search engine features (e.g., Boolean and search limiting functions)</td>
<td></td>
</tr>
<tr>
<td>e. Conduct and evaluate research projects in other classes</td>
<td></td>
</tr>
</tbody>
</table>

#### Inquiry Questions:
1. How are computers used in research?
2. Why must research be verified from several sources?
3. What ethical issues are encountered in using computer research?

#### Relevance and Application:
1. Computer research is necessary for a 21st century graduate.
2. Ethics in computer research use is a great concern for graduates.

#### Nature of Discipline:
1. Understand and use the computer efficiently as a research tool
## Content Area: Technology - Middle Level Computer Power

### Standard

**Standard 4: Critical Thinking, Problem Solving, and Decision Making**  
**Standard 6: Technology Operations and Concepts**

### Prepared Graduates:

- Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
- Students demonstrate a sound understanding of technology concepts, systems and operations.

### Grade-Level Expectation

**Concepts and skills students master:**

1. Students use technology tools to enhance learning, increase productivity, and promote creativity.
2. Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.

### Evidence Outcomes | 21st Century Skills & Readiness Competencies

#### Students can:

<table>
<thead>
<tr>
<th>Evidence Outcomes</th>
<th>21st Century Skills &amp; Readiness Competencies</th>
</tr>
</thead>
</table>
| a. Place and size Internet images within a document or project | Inquiry Questions:  
1. How are images made digitally?  
2. What advantages does a digital image have over a regular photograph?  
3. What ethical issues are encountered using digital images? |
| b. Create a drawing / design project |  |
| c. Place and size a student-drawn graphic within a writing project |  |
| d. Modify digital images |  |
| e. Use related graphics peripherals: digital cameras, scanners |  |

**Inquiry Questions:**

1. How are images made digitally?  
2. What advantages does a digital image have over a regular photograph?  
3. What ethical issues are encountered using digital images?

**Relevance and Application:**

1. Using images to enhance publication/presentations is necessary to be successful.  
2. Ethical use of digital images is needed to avoid copyright infringement.

**Nature of Discipline:**

1. Understand and use digital images efficiently in multiple forms of publications
**Content Area: Technology - Middle Level Compute Power**

**Standard**

**Standard Two: Communication and Collaboration**

**Standard Three: Research and Information Fluency**

**Prepared Graduates:**

- Students use digital media environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
- Students apply digital tools to gather, evaluate, and use information.

**Grade-Level Expectation**

**Concepts and skills students master:**

1. Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
2. Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

<table>
<thead>
<tr>
<th>Evidence Outcomes</th>
<th>21st Century Skills &amp; Readiness Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Students can:</strong></td>
<td><strong>Inquiry Questions:</strong></td>
</tr>
<tr>
<td>a. Create multimedia presentations with text and graphics</td>
<td>1. How are computers used to create powerful and exciting presentations?</td>
</tr>
<tr>
<td>b. Create spreadsheets for real-life situations</td>
<td>2. What types of multimedia presentations are available for computers?</td>
</tr>
<tr>
<td>c. Paste a spreadsheet into another document</td>
<td><strong>Relevance and Application:</strong></td>
</tr>
<tr>
<td>d. Create a chart or graph from spreadsheet data</td>
<td>1. Multimedia presentations are necessary for a 21st century graduate.</td>
</tr>
<tr>
<td>e. Paste a chart or graph into another document</td>
<td>2. Creating multimedia presentations is a life skill for a 21st century graduate.</td>
</tr>
<tr>
<td>f. Understand the difference between a spreadsheet and a database</td>
<td>3. Being able to organize and manipulate data is necessary for a 21st century graduate.</td>
</tr>
<tr>
<td>g. Extension: Create a database file and merge with other documents</td>
<td><strong>Nature of Discipline:</strong></td>
</tr>
<tr>
<td>h. Intervention from the teacher or peers</td>
<td>1. Understand and use the computer efficiently as a production and creation tool</td>
</tr>
<tr>
<td>i. Complete projects on time</td>
<td><strong>Inquiry Questions:</strong></td>
</tr>
</tbody>
</table>

**Inquiry Questions:**

1. How are computers used to create powerful and exciting presentations?
2. What types of multimedia presentations are available for computers?

**Relevance and Application:**

1. Multimedia presentations are necessary for a 21st century graduate.
2. Creating multimedia presentations is a life skill for a 21st century graduate.
3. Being able to organize and manipulate data is necessary for a 21st century graduate.

**Nature of Discipline:**

1. Understand and use the computer efficiently as a production and creation tool.
# Content Area: Technology - Middle Level Computer Power

**Standard**

- **Standard 4: Critical Thinking, Problem Solving, and Decision Making**
- **Standard 5: Digital Citizenship**
- **Standard 6: Technology Operations and Concepts**

### Prepared Graduates:
- Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
- Students understand human, cultural and societal issues related to technology and practice legal and ethical behavior.
- Students demonstrate a sound understanding of technology concepts, systems and operations.

### Grade-Level Expectation

#### Concepts and skills students master:

1. Students use technology tools to enhance learning, increase productivity, and promote creativity.
2. Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.
3. Students use the computer to make creative and original programs.
4. Students use the computer as a tool to solve real-world problems.

### Evidence Outcomes

#### Students can:

- Produce a creative work using technology
- Employ a software application related to a specific curriculum area to accomplish a learning goal
- Solve a real problem using technology
- Explore and evaluate a sampler of software applications
- Complete a programming project

### 21st Century Skills & Readiness Competencies

#### Inquiry Questions:

- 1. How are computers used to create powerful and exciting presentations?
- 2. What types of multimedia presentations are available for computers?

#### Relevance and Application:

- 1. Understanding linear programming is necessary for a 21st century graduate.
- 2. Many problems must be solved using the computer as a tool.
- 3. Being able to organize and manipulate data is necessary for a 21st century graduate.

#### Nature of Discipline:

- 1. Understand how a computer reads, stores and manipulates data is necessary to be able to make full use of the computer's capabilities.
<table>
<thead>
<tr>
<th><strong>Word</strong></th>
<th><strong>Definition</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptable Use Policy (AUP)</td>
<td>AUP: A set of rules and guidelines that are set up to regulate Internet use and to protect the use.</td>
</tr>
<tr>
<td>Application or Software</td>
<td>Computer program -- Software that allows you to perform a task or solve a specific problem. Programs that allow you to accomplish certain tasks such as write letters, analyze numbers, sort files, manage finances, draw pictures, and play games.</td>
</tr>
<tr>
<td>Browser</td>
<td>Software needed to be able to view information on the internet.</td>
</tr>
<tr>
<td>Byte</td>
<td>A unit of storage usually made up of eight bits. It represents one character – a letter, digit, or symbol.</td>
</tr>
<tr>
<td>Central Processing Unit (CPU)</td>
<td>Electronic circuits that interpret and execute instructions and communicates with the input, output, and storage device.</td>
</tr>
<tr>
<td>Firewall</td>
<td>Technology that prevents users from inappropriate websites and protects the network from unauthorized users.</td>
</tr>
<tr>
<td>Freeware</td>
<td>Software written and then donated to the public, so anyone is free to copy it and share it with their friends. This is not the same as shareware or commercial software, because those are supposed to be paid for.</td>
</tr>
<tr>
<td>Gigabyte</td>
<td>Approximately a billion bytes (or 1,000 megabytes).</td>
</tr>
<tr>
<td>Gigahertz (GHZ)</td>
<td>A billion machine cycles per second.</td>
</tr>
<tr>
<td>Graphical User Interface</td>
<td>The use of graphical symbols instead of text commands to control common computer functions such as copying programs and disks.</td>
</tr>
<tr>
<td>Hacker</td>
<td>An unauthorized person who secretly gains access to computer files.</td>
</tr>
<tr>
<td>Internet Browser</td>
<td>Provides access to the Internet through a service provider by using a graphical interface.</td>
</tr>
<tr>
<td>Mainframes</td>
<td>Classified by size, the second largest classification of computers. Much larger than desktops or laptop computers.</td>
</tr>
<tr>
<td>Microcomputer</td>
<td>Personal computers or desktop computers.</td>
</tr>
<tr>
<td>Network</td>
<td>A system of connected computers that allows a sharing of files and equipment. There are two types of networks: local area network (LAN) and wide area network (WAN).</td>
</tr>
<tr>
<td>Operating systems software (OS)</td>
<td>The set of programs that must be on your computer for the computer to boot properly. It controls all the overall activity of a computer and the way other program and your desktop work.</td>
</tr>
<tr>
<td>Public Domain</td>
<td>Software written and then donated to the public. Anyone can use and copy public domain software free of charge, but it is not always the same quality as commercial software.</td>
</tr>
<tr>
<td>RAM</td>
<td>Random access memory. Memory that the computer user can access. It can be changed if necessary (resaving a word processing document). The computer’s working memory.</td>
</tr>
<tr>
<td>ROM (Read only memory)</td>
<td>Read ONLY Memory. Memory that contains programs and data that are permanently recorded when the computer is built. Information stays in memory even when the computer shuts down.</td>
</tr>
<tr>
<td>Search Engines</td>
<td>Software that searches, gathers, and identifies information from a database based on an index, keywords or titles.</td>
</tr>
<tr>
<td>Search Strategies</td>
<td>There are 3 basic ways to begin a search: 1. Try to guess the URL; 2. Use Subject directories provided by some search engines; 3. Use a Search engine for large searches using unique keywords or combinations of keywords to.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>narrow a search</td>
<td>A form of free software; however, the author of shareware hopes you will make a voluntary contribution for using the product. Software that can be tried before you purchase.</td>
</tr>
<tr>
<td>Shareware</td>
<td>A program that consists of instructions used to control hardware and accomplish tasks. The programs or instructions that tell the computer what to do.</td>
</tr>
<tr>
<td>Software</td>
<td>Classified by size, the largest classification of computers</td>
</tr>
<tr>
<td>Supercomputer</td>
<td>A computer program designed to damage computer files</td>
</tr>
<tr>
<td>Virus</td>
<td>A computer file designed to do damage that goes through a computer and possibly a network.</td>
</tr>
<tr>
<td>Worm</td>
<td>WYSIWYG (Pronounced: “Wissy wig”)</td>
</tr>
<tr>
<td>WYSIWYG</td>
<td>WYSIWYG is an acronym for “What You See Is What You Get” and is pronounced “wizzy wig.” WYSIWYG simply means that the text and graphics shown on your screen exactly match your printouts.</td>
</tr>
</tbody>
</table>