Technology Instructional Units Grades 5 & 6



TECHNOLOGY CURRICULUM INSTRUCTIONAL UNITS TASK FORCE MEMBERS

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Unit 1

Data Management







| Unit Overview | | | |
|--|----------------------------|--|--|
| Content Area: Technology | | | |
| Unit Title: Data Management | Unit: 1 | | |
| Target Course/Grade Level: 5 th and 6 th | Timeline: 6 class sessions | | |

Unit Summary Technology enables the storage, maintenance and search-ability of large amounts of data. This process has established the importance of the creation of and editing of spreadsheets and databases. An understanding of the implementation of these systems is of critical importance to emergent learners.

| Learning Targets | | | |
|------------------|--|--|--|
| Standards | | | |
| 8.1 | Educational Technology All students will use digital tools to access, manage, evaluate and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge | | |
| 9.1 | All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures. | | |

- The use of technology and digital tools requires knowledge and appropriate us of operations and related applications (8.1.8.A)
- The ability to recognize a problem and apply critical thinking and problem-solving skills to solve the problem is a lifelong skill that develops over time (9.1.A)
- Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking (9.1.B)
- Digital media are 21st century tools used for local and global communications. There are ethical and unethical uses of communication and media. There are ethical and unethical uses of communication and media (9.1.E)

| CPI # | Cumulat | tive Progress Indicator (CPI) – |
|---|--|---|
| 8.1.8.A.2 | Create professional documents (e.g. newsletter, personalized learning plan, business letter of | |
| | using adv | ranced features of a word processing program |
| 8.1.8.A.4 | Generate a spreadsheet to calculate, graph, and present information | |
| 9.1.8.A.1 | Develop strategies to reinforce positive attitudes and productive behaviors that impact critical | |
| | thinking | and problem-solving skills |
| 9.1.8.A.2 | Summari | ize strategies used by various organizations and agencies to solve problems that impact |
| | commun | ities, and compare them with the strategies used by similar organizations in another |
| | state or o | country. |
| 9.1.8.B.1 | Use multiple points of view to create alternative solutions. | |
| 9.1.8.E.1 | Explain how technology has strengthened the role of digital media in the global society. | |
| 9.1.8.E.4 | Determine the undesired consequences of unethical uses of media. | |
| 9.1.8.E5 | Compare | and contrast ways governments regulate media advertising to protect children and |
| adults in the United States and in other countries. | | the United States and in other countries. |
| Mathematics 6.SP.4 | | Display numerical data in plots on a number line, including dot plots, histograms, and |
| | | box plots. |
| Mathematics 6.SP.5 | | Summarize numerical data sets in relation to their context |

Unit Essential Questions

- How can students enter data and interpret the information using spread sheet software?
- How can students create a document that will develop a one-year spending plan?
- How can students use math functions in spreadsheet software to calculate spending for a specific budget and generate a graph for the data?

Unit Understandings

- Function of spreadsheets
- data management
- creation & interpretation of graphs
- rounding and estimating

Unit Learning Targets (Outcomes) -

Students will ...

- Use spreadsheet application to input data
- Create Excel document (save to network)
- Create column headings (days/ months)
- Use AutoFill for listing days and months
- Enter data into spreadsheet
- Use a variety of cell navigation in a spreadsheet
- Format cells for: border, font, size, color, justification
- Create graphs using the Chart Wizard
 - 1. Create a bar/column graph
 - 2. Create a pie graph
- Use WordArt and ClipArt

Show aesthetic considerations for finished document in print preview

Technology Resources: Projection system, Spreadsheet software, Printed databases

Opportunities for Differentiation: Vary instruction by modality, Adaptations for LD students including but not limited to alternative assessment methods

Teacher Notes:

Primary interdisciplinary connections: Math, Science

21st Century themes:

- Critical Thinking
- Creativity and Innovation
- Problem Solving
- Life and Career Skills
- Collaboration

Evidence of Learning

Summative Assessment

- Multi-sheet spreadsheet
- Formatted graphs

Equipment needed: Computer work stations, Projection system, Consumer catalogs

Teacher Instructional Resources: Pearson Math

- Class participation/Discussion/Questioning

 Time programment
- Time management
- Teacher observation

- Self-assessment
- Student articulation/Peer Assessment

| ACTIVITIES | MATERIALS |
|---|-------------|
| Generate a spreadsheet to calculate, graph, and present information. | |
| Display numerical data sets in relation to their context, such as by: plots on a nuincluding dot plots, histograms and box plots. | umber line, |

<u>Unit 2</u>

Global Aspects of Digital Content Creation (Internet/Graphic Design)

| Unit Overview | | | |
|---|-------------------|--|--|
| Content Area: Technology | | | |
| Unit Title: Global Aspects of Digital Content Creation | Unit: 2 | | |
| Target Course/Grade Level: 5 th and 6 th grades | Timeline: Ongoing | | |

Unit Summary The accessibility of global communication that technology has facilitated allows individuals the opportunity to react to local and global events through reflection, commentary and analysis. Reflections and commentary can be supplemented by images and augmented by text formatting and presentation. Using online resources and local applications allows individuals to exchange thoughts and ideas online in a creative manner while demonstrating responsibility.

| Learning Targets | | | | |
|------------------|--|--|--|--|
| Standards | | | | |
| 8.1 | Educational Technology All students will use digital tools to access, manage, evaluate and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge | | | |
| 9.1 | All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures. | | | |

- The use of digital tools and media-rich resources enhances creativity and the construction of knowledge (8.1.8.B)
- The ability to recognize a problem and apply critical thinking and problem-solving skills to solve the problem is a lifelong skill that develops over time (9.1.A)
- Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking (9.1.B)
- Digital media are 21st century tools used for local and global communications. There are ethical and unethical uses of communication and media. There are ethical and unethical uses of communication and media (9.1.E)

| CPI# | Cumulative Progress Indicator (CPI) – | | |
|-------------|--|--|--|
| 8.1.8.B.1 | Design and create a product that addresses a real-world problem using the design process and | | |
| | working with specific criteria and constraints | | |
| 9.1.8.A.1 | Develop strategies to reinforce positive attitudes and productive behaviors that impact critical | | |
| | thinking and problem-solving skills | | |
| 9.1.8.A.2 | Summarize strategies used by various organizations and agencies to solve problems that impact | | |
| | communities, and compare them with the strategies used by similar organizations in another | | |
| | state or country. | | |
| 9.1.8.B.1 | Use multiple points of view to create alternative solutions. | | |
| 9.1.8.E.1 | Explain how technology has strengthened the role of digital media in the global society. | | |
| 9.1.8.E.4 | Determine the undesired consequences of unethical uses of media. | | |
| 9.1.8.E5 | Compare and contrast ways governments regulate media advertising to protect children and | | |
| | adults in the United States and in other countries. | | |
| ELA Writing | Recall relevant information from experiences or gather relevant information from print and | | |
| W.5.8 | digital sources; summarize or paraphrase information in notes and finished work, and provide a | | |
| W.6.8 | list of sources. | | |

Unit Essential Questions

- How can students identify and demonstrate an understanding of how technological changes impact society?
- How can students publish their work on an intranet Content Management System (CMS)?
- What methods are available and appropriate for displaying academic content in an appropriate manner?
- Can students develop appropriate technology vocabulary by using Internet-based applications?
- How can students depict science and social studies topics using computer art tools and save images for later use?

Unit Understandings

- Use of online resources involves responsible use of applications
- Human online presences while virtual have consequences often times beyond the intent of the creator
- Use of the World Wide Web is facilitated by an increased understanding of its terminology and functionality

Unit Learning Targets (Outcomes) -

Students will ...

- Use Student Resource hyperlink to Acceptable Use Policy
- Access an intranet network
- Describe and practice safe Internet usage
- Browse/discuss student web pages located on Student Web Server
- Use district saving protocol to save a set of files to a specific folder on a network drive
- Use art tools for local and online drawing programs
- Create pictorial representations of content curriculum
- Reinforce concepts for cross-curricular areas (specifically Science and Social Studies)
- Use keyboard shortcuts to save, create new files, undo
- Create and edit web pages using a WYSIWYG (what you see is what you get) editor
- Use common features of an operating system
- Create and format tables to organize content (text and images)
- Retrieve/review data (word processing documents)
- Edit/proofread and peer edit factual text
- Use 'Save as' command to relocate and rename image file(s)
- Upload images to a web server directory

Technology Resources:

Opportunities for Differentiation: Vary instruction by modality, Limit text content for LD students

Teacher Notes:

Primary interdisciplinary connections: Science, Social Studies, Language Arts, Art

21st Century themes:

- Critical Thinking
- Creativity and Innovation
- Problem Solving
- Life and Career Skills
- Collaboration

Evidence of Learning

Summative Assessment

- Publish appropriate and approved student web pages
- Use cross-curriculum related images
- Student-created cross-curricular graphic content from local and online applications
- Student consideration of critical issues

Equipment needed: Computer work stations, Browser software, Projection system, Open Source content management system

Teacher Instructional Resources:

- Lower Township Student Web Server
- Cool Text Graphics Generator
- World Book Online
- <u>Teacher Resource Page(s)</u>

| Formative Assessments | | | |
|--|--|--|--|
| Publish projects to student web server | Teacher observation | | |
| Saving files and file management | Self-analysisAssessment of images' aesthetic values | | |
| Class participation/Discussion | | | |
| Time management | | | |
| | <u>MATERIALS</u> | | |
| <u>ACTIVITIES</u> | <u>MATERIALS</u> | | |
| • Student created web pages | <u>MATERIALS</u> | | |
| | MATERIALS | | |
| Student created web pages | MATERIALS | | |

Unit 3

Multi-Media Presentations

| Unit Overview | | | |
|--|----------------------------|--|--|
| Content Area: Technology | | | |
| Unit Title: Multi-media Presentations | Unit: 3 | | |
| Target Course/Grade Level: 5 th and 6 th | Timeline: 9 class sessions | | |

Unit Summary Technology has allowed for the creation of media-rich presentations which can be used to present subjects in a dynamic, multi-faceted way. Learners should be able to harness the tools of technology to relate information to a variety of audiences in an audio-visual manner.

| Learning Targets | | | | |
|---|---|--|--|--|
| Standards | | | | |
| 8.1 Educational Technology All students will use digital tools to access, manage, evaluate synthesize information in order to solve problems individually and collaboratively and to communicate knowledge | | | | |
| 8.2 | Technology Education, Engineering, and Design All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment. | | | |
| 9.1 | All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures. | | | |

- The use of technology and digital tools requires knowledge and appropriate us of operations and related applications (8.1.8.A)
- Knowledge and understanding of human, cultural, and societal values are fundamental when designing technology systems and products in the global society (8.2.8.C)
- The ability to recognize a problem and apply critical thinking and problem-solving skills to solve the problem is a lifelong skill that develops over time (9.1.A)
- Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking (9.1.B)
- Digital media are 21st century tools used for local and global communications. There are ethical and unethical uses of communication and media. There are ethical and unethical uses of communication and media (9.1.E)

| CPI# | Cumulative Progress Indicator (CPI) – | | |
|-----------|---|--|--|
| 8.1.8.A.3 | Create a multimedia presentation including sound and images | | |
| 8.2.8.C.2 | Develop an innovative solution to a complex, local or global problem or issue in collaboration with | | |
| | peers and experts, and present ideas for feedback in an online community | | |
| 9.1.8.A.1 | Develop strategies to reinforce positive attitudes and productive behaviors that impact critical | | |
| | thinking and problem-solving skills | | |
| 9.1.8.A.2 | Summarize strategies used by various organizations and agencies to solve problems that impact | | |
| | communities, and compare them with the strategies used by similar organizations in another | | |
| | state or country. | | |
| 9.1.8.B.1 | Use multiple points of view to create alternative solutions. | | |
| 9.1.8.E.1 | Explain how technology has strengthened the role of digital media in the global society. | | |
| 9.1.8.E.4 | Determine the undesired consequences of unethical uses of media. | | |
| 9.1.8.E5 | Compare and contrast ways governments regulate media advertising to protect children and | | |
| | adults in the United States and in other countries. | | |
| ELA | Recall relevant information from experiences or gather relevant information from print and | | |
| Writing | digital sources; summarize or paraphrase information in notes and finished work, and provide | | |
| W.5.8 | a list of sources. | | |
| W.6.8 | | | |

Unit Essential Questions

- How can multi-media software be used by students to facilitate presentation of learned concepts?
- How can students use online resources to create and edit a multimedia project that cites sources and includes student-generated content?
- Does the inclusion of student-created files embedded in a presentation increase effectiveness?

Unit Understandings

- Use digital tools to synthesize information in order to solve problems individually creatively and to create and communicate knowledge.
- Use online resources responsibly through the citation of sources of information
- Create a bibliography

Unit Learning Targets (Outcomes) - Students will ...

- Use a multi-media application to present content
- Create slides and add backgrounds
- Compose text (curriculum related)
- Save to Data Drive (T:) in teacher folder
- Insert images (Clip Art, saved graphic files from MS Paint or other)
- Format Word Art, Text, Text boxes
- Use Slide Transitions including Sounds, Timings and Effects
- Use Custom Animations including Sounds, Timings and Effects
- Proofread/edit timing of finished show

Technology Resources: Projection system, Multi-media software (PowerPoint, Google APPS)

Opportunities for Differentiation: Vary instruction by modality, Limit text content for LD students

Teacher Notes:

Primary interdisciplinary connections: Language Arts, Science, Social Studies

21st Century themes:

- Critical Thinking
- Creativity and Innovation
- Problem Solving
- Life and Career Skills
- Collaboration

Evidence of Learning

Summative Assessment

Multi-slide presentation including bibliography, text content and graphics

Equipment needed: Computer work stations, Projection system

Teacher Instructional Resources: http://www.worldbookonline.com/student/home

- Present projects to whole group via projection system
- Self-assessment

- Class participation/discussion/questioning
- Time management
- Teacher observation

| | ACTIVITIES | | MATERIALS |
|---|--|-----------------------------------|-----------|
| • | Create a multimedia presentation including sound | and images. | |
| • | Use online resources to locate pertinent informat | ion focused on "where, when, who, | |
| | what, how, why" | | |
| • | Synthesize information into presentable format | | |
| • | Select appropriate images for related text content | | |

Unit 4

Web - Collaboration

| Unit Overview | | |
|--|-------------------|--|
| Content Area: Technology | | |
| Unit Title: Online Collaboration and Shared-Host Web Server | Unit: 4 | |
| Target Course/Grade Level: 5 th and 6 th | Timeline: Ongoing | |

Unit Summary Shared computing resources (cloud technology) have enabled real-time collaboration on real-world problems. Global citizens should be aware of the capabilities of this technology as well as its positive impact and potential negative consequences. An understanding of the nature and impact of computer technology as it relates to the individual and society is critical to the development of 21st century learners.

| Learning Targets | | |
|------------------|---|--|
| Standards | | |
| 8.1 | Educational Technology All students will use digital tools to access, manage, evaluate and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge | |
| 8.2 | Technology Education, Engineering, and Design All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment. | |
| 9.1 | All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures. | |

- Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors (8.1.8.D)
- Technology products and systems impact every aspect of the world in which we live (8.2.8.A)
- The ability to recognize a problem and apply critical thinking and problem-solving skills to solve the problem is a lifelong skill that develops over time (9.1.A)
- Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking (9.1.B)
- Digital media are 21st century tools used for local and global communications. There are ethical and unethical uses of communication and media. There are ethical and unethical uses of communication and media (9.1.E)

| CPI # | Cumulative Progress Indicator (CPI) – |
|-----------|--|
| 8.1.8.D.1 | Model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and |
| | cyber ethics |
| 8.1.8.D.2 | Summarize the application of fair use and Creative Commons guidelines |
| 8.2.8.A.1 | Explain the impact of globalization on the development of a technological system over time |
| 9.1.8.A.1 | Develop strategies to reinforce positive attitudes and productive behaviors that impact critical |
| | thinking and problem-solving skills |
| 9.1.8.A.2 | Summarize strategies used by various organizations and agencies to solve problems that impact |
| | communities, and compare them with the strategies used by similar organizations in another |
| | state or country. |
| 9.1.8.B.1 | Use multiple points of view to create alternative solutions. |
| 9.1.8.E.1 | Explain how technology has strengthened the role of digital media in the global society. |
| 9.1.8.E.4 | Determine the undesired consequences of unethical uses of media. |
| 9.1.8.E5 | Compare and contrast ways governments regulate media advertising to protect children and |
| | adults in the United States and in other countries. |

Unit Essential Questions

- How can students manage digital content within a shared web-based service?
- How can students create and manage content while cognizant of fair use guidelines?
- What is the impact of globalization on the effort of learners to engage creatively within an online context?

Unit Understandings

- Development of global online citizenship
- Creation, management and dissemination of digital content
- Responsible use of a shared-host web based service
- Management of online digital tools and their products

Unit Learning Targets (Outcomes) -

Students will ...

- Describe and practice safe Internet usage
- Develop online citizenship skills
- Create and manage digital content through a shared-host web server
- Create, save, edit and manage documents collaboratively
- Access and navigate interactive web-based application
- Navigate using tabbed browsing
- Format text and insert appropriate images
- Observe and follow Creative Commons protocol for sharing/use of online content

Technology Resources: Shared-host Web Server (Google APPS)

Opportunities for Differentiation: Vary instruction by modality, Limit text content for LD students

Teacher Notes:

Primary interdisciplinary connections: Social Studies, Science, Language Arts

21st Century themes:

- Critical Thinking
- Creativity and Innovation
- Problem Solving
- Life and Career Skills
- Collaboration

Evidence of Learning

Summative Assessment

- Students' ongoing management of digital account and profile
- Responsible and productive use of shared-host web server

Equipment needed:

Teacher Instructional Resources:

- Manage digital content on a shared-host web server
- Class participation
- Maintain files and directories

- Teacher observation/discussion/questioning
- Collaborative analysis
- Assessment of images' aesthetic values

| <u>ACTIVITIES</u> | <u>MATERIALS</u> |
|---|------------------|
| Creation and management of digital documents | |
| Demonstrate use and understanding of protocols for online storage and retrieval | |
| Collaborative use of shared documents | |