Howard County Public School System
Educational Technology

Essential Curriculum
Grades 9-12

Goal 1: The students at all grade levels 9-12 will demonstrate the ability to explain basic technology operations and concepts.

Hardware

Objective – The student will be able to:
  a. Describe technology in appropriate language
  b. Demonstrate fundamental computer operations
     1. Connect and power on/off all devices
     2. Solve basic hardware problems
  c. Demonstrate proficient (efficient and effective) use of input devices
     1. Use the mouse/track pad
     2. Demonstrate keyboarding skill
        • Correct posture
        • Correct keyboarding techniques
     3. Operate input devices (such as microphone, digital/video camera, scanner, remote control)
  d. Demonstrate proficient use of output devices
     1. Use a printer
     2. Connect and use a projection device
     3. Transfer digital information between devices (such as computer, disk, videotape, CD, DVD, memory stick)

Software

Objective – The student will be able to:
  a. Demonstrate fundamental software operations
     1. Open and close software programs
     2. Manage files and folders
        • Create files
        • Delete files
        • Rename files
        • Print files
        • Save files to a variety of locations (such as hard drive, networks, portable storage devices)
        • Retrieve files from a variety of locations (such as hard drive, networks, portable storage devices)
        • Electronically transfer files (such as file attached to email)

- Create folders
- Select appropriate location for saving files to facilitate ease of retrieval
  3. Navigate common software features (such as drop down menus, shortcuts, tool bars, help menu)
b. Create documents using word processing programs
  1. Type and format text
     - Columns
     - Headers and footers
     - Footnotes and endnotes
     - Page numbering
     - Bullets
     - Tables
  2. Insert advanced features into document (such as tables, charts, graphs, hyperlinks, graphics)
  3. Use word processing tools
     - Spelling
     - Grammar
     - Thesaurus
     - Find and replace
c. Create documents using spreadsheet programs
  1. Create, use and modify spreadsheets
     - Perform simple calculations
     - Display, organize, filter, and sort information
  2. Generate chart/graph from data
     - Graph numerical data using bar, circle, and line graphs
  3. Incorporate spreadsheet features into other applications
d. Create products using graphics software
  1. Modify a picture or graphic
  2. Create an original graphic
e. Create products using presentation software
  1. Create a multi-media presentation using various features (such as text, digital pictures, graphics, animation, video, sound)
f. Manage information using databases
  1. Create a database
  2. Collect and enter data
  3. Use a database to analyze data
g. Utilize Internet resources
  1. Search and select information using a web browser
  2. Create and send e-mail messages
  3. Attach files to e-mail messages
h. Maintain security
  1. Log in and log out

Explore the nature of technology systems

Objective – The student will be able to:
a. Explain connectivity
   1. Evaluate types of network access for advantages and disadvantages
      - Wired
      - Wireless
      - Remote
   2. Appraise the advantages and disadvantages of the Internet
b. Explore the nature of assistive technology devices
   1. Recommend ways technology can assist in the accommodations for people with special needs
   2. Evaluate the use of technology to assist individual student learning
c. Troubleshoot problems
   1. Identify and solve hardware and software problems (such as error messages)
d. Practice safe computing
   1. Justify the use of virus protection
   2. Justify the means for protecting hardware and software from theft and vandalism

Goal 2: The students at all grade levels 9-12 will demonstrate responsible use of technology and an understanding of ethical, legal, and safety issues in using electronic media.

Social, Legal, and Ethical Issues

Objective – The student will be able to:
a. Demonstrate an understanding of cultural and societal issues related to technology
    1. Respect others' work and property
    2. Practice proper etiquette (such as use designated documents and folders)
    3. Cite sources properly (such as MLA or APA)
    4. Practice appropriate use of citations and footnotes
b. Practice responsible and appropriate use of technology systems, software, and information
    1. Explain the purpose of and follow the acceptable use policy
    2. Print responsibly
    3. Understand that the Internet is a global community with guidelines
    4. Use safe and correct security procedures (such as protect password, user id)
c. Demonstrate an understanding of current legal standards
    1. Follow legal standards for obtaining and using digital media (such as downloading, intellectual property, and copyright issues)
d. Recognize the effects of technology on the environment
    1. Evaluate ways technology can impact the environment
e. Understand current safety guidelines
    1. Practice privacy guidelines
    2. Demonstrate ways to exit an inappropriate site (such as home button, turn monitor off, notify adult)
    3. Recognize the importance of firewalls and filtering systems
f. Recognize that technology meets students' diverse learning needs, modalities, and styles
    1. Describe how different technologies can help students with their specific learning needs
g. Recognize how universal design in technology can meet personal needs

Technology and Society Through History

Objective – The student will be able to:
a. Explain how technology affects the individual and society
    1. Discuss the common uses of technology in daily life and their advantages and disadvantages
    2. Describe how technology supports lifelong learning, collaboration, personal pursuits, and productivity
    3. Compare and contrast available technology resources now and in the past
    4. Identify and explore technologies within a selected career to understand the role of technology in the workplace and society

Goal 3: The students at all grade levels 9-12 will demonstrate the ability to use a variety of technologies to increase productivity, enhance learning, promote creativity, and encourage collaboration.

Increase Productivity/Enhance Learning

Objective – The student will be able to:
a. Select and evaluate the appropriate technology based on instructional task
   1. Identify the technology necessary to complete a task
   2. Self assess/reflect on product design and choice of technology
b. Interpret data using technology
   1. Organize information
      - Graphic organizers
      - Spreadsheets
      - Graphs/Charts
      - Tables
   2. Use technology to gather data to be used in analysis (such as probe ware, PDAs, online surveys, or digital cameras)
   3. Select appropriate data display
   4. Format the data display (such as intervals in graphs, links in webs, and relationships in concept maps)
   5. Use technology to compare information
      - Graphing program
      - Graphic organizer
c. Enhance understanding of the subject through the use of content specific technology
   1. Enhance understanding of a subject by using content specific software (such as a graphing program in math) and media (such as CDs and DVDs)
   2. Enhance understanding of a subject by using content specific hardware (such as probe ware in science, heart rate monitors in physical education, or calculators in math)
   3. Enhance understanding of a subject by using web-based electronic resources (such as web quests, online databases, encyclopedias, interactive websites, and web-based software)
d. Revise and edit information and ideas
   1. Edit work created in a word processing document, spreadsheet, or presentation
   2. Update information on a graph
   3. Change graphics in a document or presentation
   4. Digital imaging

Promote Creativity

Objective – The student will be able to:
a. Create original pieces of work to communicate ideas
    1. Create original products using word processing software
    2. Convey information or original ideas using multimedia format (such as presentation or drawing software)
    3. Create and edit graphics using technology
    4. Incorporate graphics in products (such as draw object, clip art, animation, electronic art)
    5. Incorporate original video in multimedia format

Encourage Collaboration

Objective – The student will be able to:
a. Collaborate with others to create original work and enhance understanding
    1. Contribute to a class presentation
    2. Share with peers (such as E-pals)
    3. Participate in online collaborative projects

Goal 4: The students at all grade levels 9-12 will demonstrate the ability to explore technology to communicate effectively.

Effective Communication

Objective – The student will be able to:
a. Interact appropriately with peers and other audiences using communication technology
   1. Demonstrate technology's role in telecommunication
      - E-mail and/or video conferencing
      - Interactive websites
      - Bulletin board
      - Online conferences
   2. Demonstrate how telecommunication technology tools help in communication with various audiences
      - Class or school community
      - Community, state, country and world
      - Parents
      - Experts
      - Businesses
   3. Communicate ideas or information using technology
      - Presentation to various audiences such as class, parents, community, state, country, or international community
      - Participate in teacher-directed e-mail activities
      - Participate in video conferencing
      - Utilize interactive websites
      - Participate in collaborative online education projects
      - Create a web page

Media

Objective – The student will be able to:
a. Use various media and formats for multiple purposes
   1. Evaluate technology that supports communication in print media (such as MS Word)
   2. Evaluate technology that supports communication in nonprint media (such as MS PowerPoint, Kidspiration, and iLife)
   3. Determine the most appropriate medium for a particular purpose
   4. Plan, design, create, and present an academic product to various audiences inside and/or outside of the school community (such as newsletter, video, multimedia presentation, Web pages)

Goal 5: The students at all grade levels 9-12 will use technology to conduct research, derive new meaning, and report their findings/results

Locate

Objective – The student will be able to:
    a. Identify information sources available through technology
        1. Choose an appropriate electronic resource to locate information
        2. Develop and apply effective search strategies based on research models (such as Big 6 and I-Search) for academic and personal use

Gather

Objective – The student will be able to:
    a. Select relevant information from appropriate technology resources
- Web-based resources (such as internet sites, encyclopedias, online databases)
- Content specific self-contained electronic media (such as software, CDs, video resources and DVDs)

    b. Apply evaluation strategies when using electronic resources
- Accuracy of information
- Relevancy of information
- Currency of information
- Ease of access and use of the resource
- Authority/credibility of source

Organize and manage information

Objective – The student will be able to:
    a. Organize information using technology while doing research
        1. Identify appropriate formats to organize information
- Electronic graphic organizers (such as concept maps, webs, tables)
- Database
- Spreadsheet

        2. Select the appropriate electronic tool to organize information
        3. Generate appropriate products to display information
    b. Store information in a way that is easily retrievable
        1. Organize information to be easily retrievable (such as bookmarks, hot lists, web pages)
        2. Use electronic resources to cite resources properly

Report findings

Objective – The student will be able to:
    a. Demonstrate new understanding through the use of appropriate technology
        1. Apply appropriate productivity and communication technology standards

(such as written, oral, or multimedia presentations for various audiences)

Goal 6: The students at all grade levels 9-12 will demonstrate the ability to use technology for problem solving and decision-making.

Problem-solving

Objective – The student will be able to:
a. Solve real world problems using technology as a tool
1. Identify technology based tools/resources for problem solving (such as word processor, graphics/presentation program, graphic organizer, graphing calculator, digital imaging, spreadsheet, databases, probe ware, web based resources, simulation/modeling/programming software)
2. Decide which technology resources are appropriate to use to solve a specific problem
3. Apply technology based tools to solve specific problems

Decision Making

Objective – The student will be able to:
a. Make informed decisions using technology as a tool
1. Identify sources of information necessary to make informed decisions (such as web based resources, information databases, content specific software and other electronic media)
2. Decide which technology resources will be used for a specific decision
3. Apply technology based tools to make specific decisions