# NETS for Students:
# Extended Rubric for Grades 6–8

## DRAFT (September 7, 2004)

**Purpose:** This draft version of the NETS extended rubric for Grades 6–8 is available online for educational technology professionals to review and provide feedback to the developers.

**More information:** If you have questions about the rubric, please contact the developers at **netsrubric@learningpt.org**.

# NETS for Students:
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| NETS for Students | Novice<br>*By the End of Grade 6* | Basic<br>*By the End of Grade 7* | Proficient<br>*By the End of Grade 8* | Advanced |
|---|---|---|---|---|
| **1. Basic Operations and Concepts**<br><br>**a. Students demonstrate a sound understanding of the nature and operation of technology systems.** *(nature and operations)* | 1) Students **know how to connect and use** a wide variety of input and output devices and common peripherals (e.g., scanners, digital probes, digital cameras, and video projectors), and **how to access** networked resources. | 1) Students **discuss** common hardware and software problems and **identify** strategies for troubleshooting and solving minor hardware and software problems. | 1) Students **recognize** hardware and software components used to provide access to network resources and **know how** common peripherals (e.g., scanners, digital cameras, and video projectors) are accessed, controlled, connected, and used effectively and efficiently. | 1) Students **describe** strategies for identifying, solving, and preventing routine hardware and software problems that occur during everyday technology use. |
| | 2) Students know how to **explore, identify, and develop presentations** describing types of occupations or careers that rely on computer-based technology. | 2) Students **know how to apply** search engines, word processors, databases, spreadsheets, timelines, charts or graphs, communications, surveys, and other technology-based research and analysis tools to **organize, synthesize, interpret, and communicate results from data** collected regarding technological advances over time and the effects of the changes on occupations in business, industry, education, and other areas. | 2) Students **know how to evaluate, select, and use** appropriate technology tools and information resources to plan, design, develop, and communicate content information, appropriately addressing the target audience and providing accurate citations for sources. | 2) Students **know how to** research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems. |
| | 3) Students **know how to** insert photos, graphics, graphs, spreadsheets, sound, and video into word-processing, presentation, and Web documents. | 3) Students **know how to use** application features (e.g., columns, tables, headers and footers, borders, drawing menu bar) and a variety of other toolbars to format and publish content projects and products. | 3) Students **know how to identify** appropriate file formats for a variety of applications and apply utility programs to convert formats, as necessary, for effective use in Web, video, audio, graphic, presentation, word-processing, database, publication, and spreadsheet applications. | 3) Students **demonstrate an understanding** of concepts underlying hardware, software, and connectivity; the variety of ways that information and technology resources can be combined to develop and promote understanding; and the value of visual and auditory features to convey accurate and convincing information. |
| | 4) Students **know functions** of all alphabetic, numeric, special purpose and symbol keys; **can touch-type** with correct fingers of correct hands using the full keyboard; and **know how to** use a word processor to compose, type, proofread, and edit a document. | 4) Students **know how to use** proper keyboarding posture, hand and finger positions, and touch-typing techniques to improve accuracy, speed, and general efficiency in computer operation. | 4) Students **know how to use** the electronic dictionary, thesaurus, spelling and grammar checker, and editing features to maximize accuracy in development of technology-produced products. | 4) Students **know how to select and use** technology tools efficiently and effectively to collect, analyze, and display data for class assignments, projects, and presentations. |
| | 5) Students **know how to locate and use** system and application upgrade, virus protection, and spam defense software to keep a technology system working properly. | 5) Students **research and compare** features of different virus protection, spam defense, and firewall software, and **present** features of each. | 5) Students **examine** changes in hardware and software systems over time, and **identify** how changes affect business, industry, education, government, and individual users. | 5) Students **know how to make informed choices** among technology systems, resources, and services. |

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| **b1. Students are proficient in the use of technology.** *(information management)* | Students **identify** software used for information management and **know which** types of software can be used most effectively for different types of data, different information needs, and for conveying results to different audiences. | Students **know how to** organize materials in files and folders, sort files and e-mail lists (by file name and date), and sort data within application programs (e.g., word-processing tables, spreadsheets, and databases). | Students **identify** strategies and procedures for efficient and effective management and maintenance of computer files in a variety of different media and formats on a hard drive and network. | Students **identify information storage devices and strategies** used most efficiently and effectively for storing different types of data, for different purposes, for portability, and for very large files. |
| **b2. Students are proficient in the use of technology.** *(terminology and problem solving)* | Students **identify** search strategies for locating information needed, **identify** resources that contribute to solving a particular problem, **organize** information, and **communicate solution strategies and conclusions** using appropriate terminology. | Students **select** correct terminology and concepts associated with hardware, software, computer systems, networks, Internet connectivity, and technology applications (e.g., word processor, database, spreadsheet, multimedia, telecommunications, drawing, concept-mapping, simulation) and other digital resources. | Students **know how to** solve basic hardware, software, and network problems that occur during everyday use; protect computers, networks, and information from viruses, vandalism, and unauthorized use; and access online help and user documentation to solve common hardware, software, and network problems. | Students **use accurate terminology** and **select appropriate tools and technology resources** to accomplish a variety of tasks and solve problems. |
| 2. Social, Ethical, and Human Issues<br><br>**a. Students understand the ethical, cultural, and societal issues related to technology.** | Students **evaluate** the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources. | Students **recognize, discuss, and visually represent** current changes in information technologies and the effect those changes have on the workplace and society. | Students **identify** legal and ethical issues related to use of information and communication technology, **recognize** consequences of its misuse, and **predict** possible long-range effects of ethical and unethical use of technology on culture and society. | Students **identify** capabilities and limitations of contemporary and emerging technology resources. |
| **b. Students practice responsible use of technology systems, information, and software.** | Students **identify** a broad range of issues related to use and misuse of information and communication technology resources (e.g., privacy, security, copyright, file sharing, plagiarism) and **discuss** laws relating to each. | Students **identify and develop** scenarios or examples that illustrate ethical behaviors for use of personal copyrighted media (e.g., images, music, video, content, language, correctly formatted citations for the copyrighted materials). | Students **discuss** issues related to acceptable and responsible use of information and communication technology (e.g., privacy, security, copyright, file sharing, plagiarism), **analyze** the consequences and costs of unethical use of information and computer technology (e.g., hacking, spamming, consumer fraud, virus setting, intrusion), and **identify** methods for addressing these risks. | Students **identify** and **discuss** terms and concepts associated with safe, effective, and efficient use of the Internet and telecommunications resources (e.g., password, firewall, spam, security, fair use, acceptable use policy [AUP], Internet use policy [IUP], release form) and **recognize** strategies that demonstrate ethical, legal, and socially responsible use of technology and electronic resources. |
| **c. Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.** | Students **identify** their personal goals or pursuits and **explore** technology resources that may assist them in identifying paths leading to their goals or pursuits. | Students **identify how** they currently use technology and **predict** how they may use and benefit from its use in their future. | Students **examine** issues related to computer etiquette and **discuss** means for encouraging more effective use of technology to support effective communication, collaboration, personal productivity, lifelong learning, and assistance for individuals with disabilities. | Students **identify and present** a strategy they would use for preparing for a job interview in a career for which they have had little or no training. |

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| **3. Technology Productivity Tools**<br><br>**a. Students use technology tools to enhance learning, increase productivity, and promote creativity.** | Students **describe** how specific productivity tools support personal productivity, remediation of skill deficits, and their capacities for learning in different subjects. | Students **know how to use** content-specific hardware and software (e.g., environmental probes, graphing calculators, exploratory environments, simulations, Web tools) to support learning, research, productivity, and creative thinking. | Students **describe and apply** common software features (e.g., spellchecker and thesaurus to ensure accuracy of word-processing documents; formulas and chart generation in spreadsheets, and insertion of pictures, movies, sound, and charts in presentation software) to enhance communication to an audience, promote productivity, and support creativity. | Students **know how to use** technology tools and resources for managing and communicating personal, professional, or educational information (e.g., managing finances, schedules, addresses, purchases, correspondence, uniform resource locators [URLs], e-mail addresses, online references, citations). |
| **b. Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.** | Students **understand** basic principles for collaborative product development; they **identify** common roles for group members, typical rules governing individual group member responsibilities, and cooperative attitudes that facilitate successful teamwork. | Students **know how to** work in teams to **use** hardware and software tools (e.g., concept-mapping software, word processor, database, spreadsheet, publishing software, Web publishing software, drawing software, puzzle development software, timeline development software, digital still and video cameras, probes, motion detectors, light detectors, digital microscopes) to support learning, research, productivity, and creativity. | Students **describe how to use** online environments or other collaborative tools to facilitate design and development of materials, models, publications, and presentations; they **know** how to apply utilities for editing pictures, images, and charts. | Students **know how to** work collaboratively to design, develop content for, and construct a Web-based publication. |
| **4. Technology Communications Tools**<br><br>**a. Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.** | Students **know how to** develop Web-based telecommunications projects (e.g., WebQuest) that identify content, challenge other students who access the site to answer questions or give opinions adding to the content, and provide opportunity to evaluate responses or submissions for currency and accuracy. | Students **know how to** identify, evaluate, select, and use collaborative tools to survey, collect, share, and communicate information within and outside the school community. | Students **know how to use** telecommunications tools (e.g., e-mail, discussion groups, and online collaborative environments) to exchange data collected and learn curricular concepts by communicating with peers, experts, and other audiences. | Students **know how to develop** evaluation criteria for use in judging the quality of published (print, digital, video) materials for group projects; **plan, develop, and present** content-based group projects based on the criteria; and **conduct peer reviews** of the group projects using the criteria. |
| **b. Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.** | Students i**dentify how** different forms of media can be used within one presentation to communicate effectively with a wide variety of audience participants. | Students **demonstrate knowledge** of multimedia tools and concepts used by the media industry (e.g., music, games, video, radio, TV, Web sites) to entertain, sell, and influence ideas and opinions. | Students **know how to use** a variety of media and formats to design, develop, publish, and present products (e.g., presentations, newsletters, Web pages) that effectively communicate information and ideas about the curriculum to multiple audiences. | Students **know how to plan, design, and develop** a multimedia product using data (e.g., graphs, charts, database reports) to present content information. |

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| **5. Technology Research Tools**<br><br>**a. Students use technology to locate, evaluate, and collect information from a variety of sources.** | Students **know how to apply** Boolean strategies to narrow the focus of the search for online information. | Students **know how to search, collect, and evaluate** resources from a variety of locations online, and **construct** a linked list of resources (e.g., information, research, data, photos, video clips, illustrations, graphics) to support content learning and project development. | Students **know how to conduct an advanced search** using Boolean logic and other sophisticated search functions; they **know how to evaluate information** from a variety of sources for accuracy, bias, appropriateness, and comprehensiveness. | Students **know how to research and evaluate** the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems. |
| **b. Students use technology tools to process data and report results.** | Students **know how to** plan and develop database reports to organize, display, and explain findings in content areas. | Students **know how to** search and sort information in an electronic database using multiple criteria, add and delete records, and identify strategies for finding specific information. | Students **know how to identify** and implement procedures for designing, creating, and populating a database; and, in performing queries, to process data and report results relevant to an assigned hypothesis or research question. | Students **know how to create, edit, and modify** a database report and **identify trends** reflecting analysis of the data. |
| **c. Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.** | Students **compare and contrast** the functions and capabilities of the database, spreadsheet, and word processor for processing data, calculating, and reporting results. | Students **know how to select** information and technological resources based on the appropriateness and efficiency for completing tasks, providing the desired information, or addressing the identified objectives. | Students **know how to select** and use information and communication technology tools and resources to collect and analyze information and report results on an assigned hypothesis or research question. | Students **know how to select and use** technology tools to efficiently analyze and display data. |
| **6. Technology Problem-Solving and Decision-Making Tools**<br><br>**a. Students use technology resources for solving problems and making informed decisions.** | Students **know how to use** spreadsheet data and simulations to make predictions, strategize solutions, and evaluate decisions regarding steps to take in solving problems. | Students **know how to integrate** data-gathering instruments (e.g., probes, electronic calculators, handheld devices) with spreadsheets, use data analysis tools within the spreadsheet to analyze the data, graph results, and inform conclusions drawn from the data. | Students i**dentify** two or more types of information and communication technology tools or resources that can be used for informing and solving a specific problem and presenting results, or for identifying and presenting an informed rationale for a decision. | Students **develop strategies for** use of data analysis, models, and simulations to make specific decisions regarding a course of action for solving real-world problems. |
| **b. Students employ technology in the development of strategies for solving problems in the real world.** | Students **recognize and discuss** how spreadsheets are used to calculate, graph, and represent data in a variety of settings (e.g., schools, government, business, industry, mathematics, science). | Students **know how to apply** formulas, functions, and "what if" statements in spreadsheets and graphs or charts to analyze and interpret data for content assignments. | Students **describe** the information and communication technology tools they might use to compare information from different sources, analyze findings, determine the need for additional information, and draw conclusions for addressing real-world problems. | Students **know how** to identify a problem; develop a solution strategy; collect data on the effectiveness of the strategy; and analyze, interpret, publish, and present the data and conclusions based on real-world data. |