Technology Literacy Standards

Adopted: Summer 2013

<u>Metropolitan Nashville Public Schools – Vision Statement</u>

Metropolitan Nashville Public Schools will provide every student with the foundation of knowledge, skills, and character necessary to excel in higher education, work, and life.
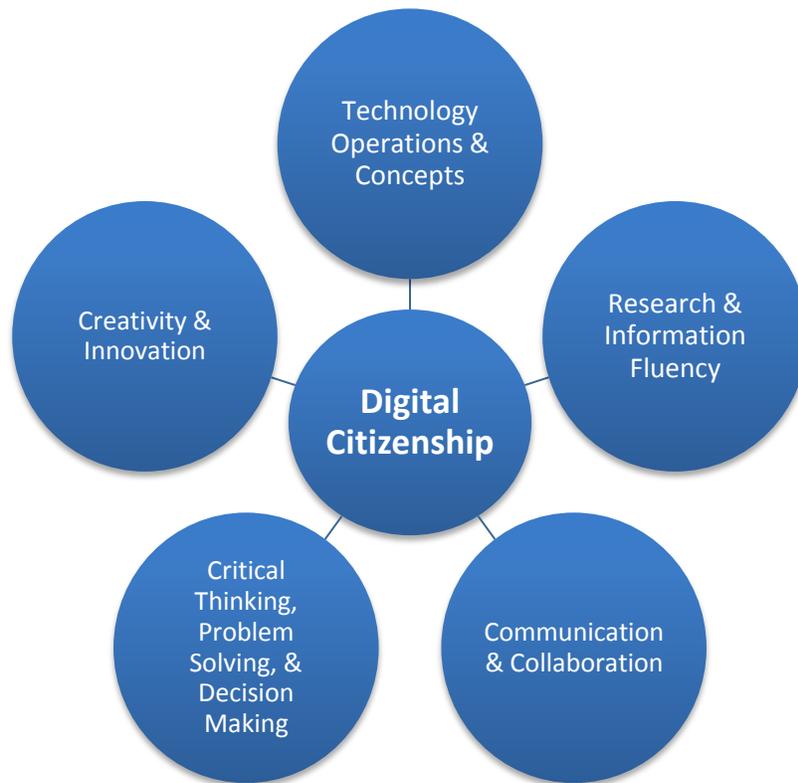
<u>Technology Literacy Standards: Introduction</u>

The members of the Learning Technology Plan committees and the leaders of MNPS believe that access to and the purposeful use of technology is essential to the development of the knowledge, skills, and character necessary to learn, work, and live in an increasingly complex and information-rich society. In the 21st century, the ability to responsibly use and navigate technology has become vital to the access and evaluation of information necessary for daily life in school, in the workplace, and at home. Therefore, it is critical that each MNPS student acquire the skills and knowledge necessary to use, navigate, and leverage the technology and environments available not only today, but in the future.

The MNPS Technology Literacy Standards are aligned to federal, state, and local objectives. The United States adheres to the International Society for Technology in Education (ISTE) National Education Technology Standards (NETS), around which these Standards are organized. Further, at the state level, Tennessee and MNPS will implement the Common Core State Standards (CCSS) in 100% of schools by the 2014-2015 school year. The CCSS are a transformation of teaching characterized by learning that is deeper and broader than previous state and national standards. To assess achievement on CCSS, Tennessee will administer the Partnership for the Assessment of Readiness for College and Careers (PARCC) online tests in literacy and numeracy. The Technology Literacy Standards are aligned to the CCSS and PARCC to support student and teacher success in the classroom and on PARCC assessments.

In addition to state and federal alignment, the Technology Literacy Standards are directly aligned to the second of five overarching MNPS goals: *To graduate all students from high school with college and career readiness by ensuring academic success for every student.* To achieve success, the standards employ an integrated K-12 approach to technology education. These standards understand technology to be a tool used across disciplines, not as a discipline itself. Finally, the standards are the product of public-private collaboration to ensure alignment to industry expectations and needs. A student that achieves these standards will be prepared for success in higher education, work, and life.

ISTE National Education Technology Standards – Students

The Technology Literacy Standards are structured around the ISTE NETS-S. Considering each of the six NETS competencies, the authors of these standards agree that Digital Citizenship is central to all educational use of technology. Responsible use of technology tools and information pervades all types of use, such as communication and research. This is reflected in the conceptual framework graphic below. Therefore, Digital Citizenship competencies are incorporated across categories in each of the K-12 sections.

Standards Organization

		Elementary	Middle	High
1.	Creativity & Innovation	1. Students think creatively, construct knowledge, and develop innovative products and processes using technology		
2.	Communication & Collaboration	1. Students effectively use technology for communication and collaboration with peers, instructors, and other audiences		
3.	Research & Information Fluency	1. Students use technology to locate, evaluate, extract, and organize information from a variety of sources		
4.	Critical Thinking, Problem Solving, & Decision Making	1. Students effectively use technology for critical thinking, problem solving, and decision making		
5.	Technology Operations & Concepts	1. Students demonstrate an understanding of technology systems 2. Students select and use hardware effectively and productively 3. Students select and use applications effectively and productively		

Glossary of Terms

Applications: a comprehensive term for collections of computer data and instructions composed of two broad categories: system software providing the basic functions of the computer and applications used by users to accomplish tasks.

Demonstrate: May encompass verbal or written explanation, presentation (including video and other multimedia), applied knowledge or skills, short or long-term research project (individual or collaborative), peer teaching, and any other means that reveals a full understanding of the concept or skill.

Device or Hardware: Encompasses any piece of equipment used by students and teachers, including but not limited to interactive white boards, desktops, netbooks, laptops, tablets, mobile devices (such as smartphones, iPods, etc.), e-books and readers (such as Nooks).

Digital Citizenship: The responsible, ethical, legal, and safe use of technology systems by individuals as members of society and citizens of the global community.

Environment: Any context in which learning takes place, including but not limited to traditional "brick and mortar" classrooms, blended and digital learning, virtual school, and other options.

Assessment

Assessments of student achievement will be administered in a variety of ways. First, elementary students will produce a digital portfolio of work that displays the required competencies beginning 2014-2015. Second, all eighth grade students will be required to take an online Technology Literacy Assessment. This will begin during the 2013-2014 school year. Finally, all capstone experiences will include a required technology component beginning 2014-2015, specific to each student's chosen course of study and customized capstone plan. Teachers and principals may choose to administer additional assessments throughout the K-12 experience. Details on each of these requirements can be acquired from the Leadership and Learning Department.

MNPS strives to encourage all teachers to integrate technology in ways that engage and encourage students as well as enhance their own professional practice. Coaching and instructional design training will employ an instructional design matrix developed by MNPS instructional designers. This matrix may also be used during observations in future years. It is focused on professional growth and can be obtained on the Learning Technology Department [website](#).

Students with Disabilities

Students with documented disabilities may have to complete standards in accordance with their Individual Education Plan (IEP) by using alternate methods or technologies. Accommodations, modifications, and alternate devices, if needed, should be used under the supervision of the appropriate Exceptional Education Service Provider listed on the IEP.

<u>Elementary School</u>

By the end of elementary school, every student should be comfortable exploring and using technology. Through exposure to a variety of devices, applications, and age-appropriate internet tools, all students will approach technology as a tool for learning. Most importantly, all students will have a foundational understanding of responsible and safe use of these devices, applications, and the internet. The use of technology enhances learning for all *students, including English Language Learners and students with disabilities, and will be integrated across disciplines at every grade level. By setting a foundation for technology as a tool for learning, students will be prepared for the requirements of middle school.*

Creativity and Innovation
1.1 Students think creatively, construct knowledge, and develop innovative products and processes using technology
- Create original works as a means of personal or group expression
- Apply existing knowledge to generate new ideas, products, or processes
- Plan, design, develop a multimedia product to present research findings and creative ideas effectively

Communication & Collaboration
2.1 Students effectively use technology for communication and collaboration with peers, instructors, and other audiences
- Demonstrate an understanding of the personal responsibility, ethics, and safety issues associated with using technology and online communications at home and at school
- Use age-appropriate devices and applications to communicate and exchange ideas and information to multiple audiences
- Use technology in individual, group, and class presentations
- Develop cultural understanding and global awareness by engaging with learners of other cultures
- Reflect on effective strategies for communicating and collaborating with peers, instructors, and other audiences across a variety of digital environments and tools

Research & Information Fluency
3.1 Students use technology to locate, evaluate, extract, and organize information from a variety of sources
- Demonstrate responsible and ethical use of information (including academic, social, media, and other content types)
- Use age-appropriate devices and applications (on and off-line) to locate, evaluate, extract, organize, and share information, working individually and collaboratively

- Evaluate age-appropriate resources and explain why each is or is not useful for a specific purpose
- Demonstrate basic understanding of ownership of ideas, plagiarism, and citations – using age-appropriate references

Critical Thinking, Problem Solving, and Decision Making

4.1 Students effectively use technology for critical thinking, problem solving, and decision making
- Determine and use age-appropriate technology to define problems, propose hypotheses, solve problems, make decisions, and reflect on work completed
- Use a variety of age-appropriate devices and applications to gather and analyze data to address real-world problems and situations

Technology Operations & Concepts

5.1 Students demonstrate an understanding of technology systems
- Demonstrate responsible use of technology systems and applications
- Demonstrate an understanding of the role of technology in academic, workplace, government, social, and commercial contexts
- Communicate about basic technology systems and the internet using correct terminology
- Explain why a particular device or application is appropriate for a given task

5.2 Students select and use hardware effectively and productively
- Recognize and demonstrate understanding of basic physical features of various devices
- Navigate between multiple platforms and device types
- Demonstrate basic keyboarding and touchpad skills and techniques on a variety of devices

5.3 Students select and use applications effectively and productively
- Demonstrate basic proficiency in the use of word processing programs
- Demonstrate basic proficiency in the creation and use of spreadsheets
- Demonstrate a conceptual understanding of the use of databases and/or electronic records
- Demonstrate basic proficiency in the creation and use of presentations and multimedia
- Demonstrate basic proficiency using age-appropriate programming applications
- Demonstrate basic proficiency and safety in age-appropriate internet navigation and online communication
- Demonstrate an understanding of basic computer and internet security

<u>Middle School</u>

By the end of middle school, all students will be fluent in the use of technology as a tool for critical thinking, problem solving, communication, and decision making. Students will effectively use applications such as word processing, spreadsheets, databases, multimedia and presentations, and internet tools. Through regular use of devices and applications, students will be adept in the selection of appropriate tools for a given task across all disciplines. The sum of this knowledge and skill will be the ability to discover and understand various technologies and apply them to learning.

In addition to skill proficiency, students will understand the legal, ethical, and safety issues concerning technology and internet use. Students will know how to protect their personal identity and information online and have an awareness of how they present themselves in a variety of digital environments. In doing so, students will be prepared to be responsible, global citizens.

Creativity and Innovation

1.1 Students think creatively, construct knowledge, and develop innovative products and processes using technology
- Create original works as a means of personal or group expression
- Apply existing knowledge to generate new ideas, products, or processes
- Plan, design, and develop a multimedia product to present research findings and creative ideas effectively

Communication & Collaboration

2.1 Students effectively use technology for communication and collaboration with peers, instructors, and other audiences
- Demonstrate an understanding of the personal responsibility, ethics, and safety issues associated with using technology and online communications at home and at school
- Use age-appropriate devices and applications to locate, evaluate, extract, organize, and share information for specific purposes, working individually and collaboratively
- Collaborate on a project with other students, using technology to share and communicate, and present information
- Develop cultural understanding and global awareness by engaging with learners of other cultures
- Reflect on effective strategies for communicating and collaborating with peers, instructors, and other audiences across a variety of digital environments and tools

Research & Information Fluency

3.1 Students use technology to locate, evaluate, extract, and organize information from a variety of sources

- Demonstrate responsible and ethical use of information (including academic, social, media, and other content types)
- Use content-relevant devices and applications (on and off-line) to locate, evaluate, extract, organize, and share information for specific tasks working individually and collaboratively
- Use and evaluate a variety of devices and applications and explain why each is or is not accurate, relevant, or appropriate for a specific task
- Demonstrate appropriate use of in-text and reference list citations

Critical Thinking, Problem Solving, and Decision Making

4.1 Students effectively use technology for critical thinking, problem solving, and decision making

- Determine and use appropriate devices and applications to define problems, propose hypotheses, solve problems, and make decisions in real world situations, individually and collaboratively
- Use databases and spreadsheets to evaluate information and propose solutions to real world problems and situations
- Problem-solve using help options/toolbar, online resources, etc.
- Evaluate the content, organization, design, use of citations, and presentation of technologically enhanced projects using provided or class-developed guidelines
- Determine and use age-appropriate technology to define problems, propose hypotheses, solve problems, make decisions, and reflect on work completed

Technology Operations & Concepts

5.1 Students demonstrate an understanding of technology systems

- Demonstrate responsible use of technology systems and applications
- Demonstrate an understanding of the role of technology in academic, workplace, government, social, and commercial contexts
- Demonstrate an understanding of the variety of ways to access content and the potential compatibility issues between those types of technology
- Explain why a particular device or application is appropriate for a given task

5.2 Students select and use hardware effectively and productively
- Demonstrate proficiency in the use of basic features of a variety of devices
- Navigate between multiple platforms and device types
- Identify appropriate troubleshooting strategies for common hardware issues
- Demonstrate intermediate keyboarding and touch pad skills and techniques on a variety of devices
- Identify and use a variety of storage media (USB, cloud, network drive, etc.) and explain why a certain media is appropriate for a given task
- Demonstrate the ability to operate peripheral equipment (scanner, camera, clickers, printer)
- Use self-help features such as online tutorials, videos, and manuals to learn to use hardware

5.3 Students select and use applications effectively and productively
- Demonstrate intermediate proficiency in the use of word processing programs
- Demonstrate intermediate proficiency in the creation and use of spreadsheets
- Demonstrate basic proficiency in the use of databases and/or electronic records
- Demonstrate intermediate proficiency in the creation and use of presentations and multimedia
- Demonstrate intermediate proficiency using age-appropriate programming applications
- Demonstrate proficiency and safety in age-appropriate internet navigation and online communication
- Demonstrate an understanding of computer and internet security
- Identify appropriate troubleshooting strategies for minor application issues/problems
- Use self-help features such as online tutorials, videos, and manuals to learn to use applications

<u>High School</u>

All students will graduate MNPS with foundational technology skills applicable and common to all disciplines. These skills will be regularly integrated over the course of high school. Students will graduate with a deep understanding of the role technology plays in society, in industry, and at home, enabling them to plan for the future. These skill sets will ensure MNPS graduates are equipped to be globally skilled, responsible, productive contributors in higher education, at work, and at home.

During high school, MNPS students participate in a variety of advanced and specific courses, including but not limited to the Academies of Nashville, Career and Technical courses, and blended and online learning. These specialized courses include a variety of sophisticated technology skills, differing across fields. Therefore, students will also vary in the types of technology on which they are trained and the depth at which they are trained. In addition to achieving common foundational skills, students will become versed in appropriate advanced skills and applications necessary for their chosen coursework. In alignment with industry needs and expectations, students will have the option to obtain an industry-appropriate certification in many of these advanced fields, including a variety of technology certifications.

Creativity and Innovation
1.1 Students think creatively, construct knowledge, and develop innovative products and processes using technology
- Create original works as a means of personal or group expression
- Apply existing knowledge to generate new ideas, products, or processes
- Plan, design, and develop a multimedia product to present research findings and creative ideas effectively

Communication & Collaboration
2.1 Students effectively use technology for communication and collaboration with peers, instructors, and other audiences
- Demonstrate an understanding of the personal responsibility, ethics, and safety issues associated with using technology and online communications at home and at school
- Select and use appropriate devices and applications to locate, evaluate, extract, organize, and share information for specific purposes, working individually and collaboratively
- Interact, collaborate, and complete projects with students, instructors, and others outside the school employing a variety of digital environments and media
- Develop cultural understanding and global awareness by engaging with learners of other cultures
- Complete at least one online course

- Reflect on effective strategies for communicating and collaborating with peers, instructors, and other audiences across a variety of digital environments and tools

Research & Information Fluency

3.1 Students use technology to locate, evaluate, extract, and organize information from a variety of sources
- Demonstrate responsible and ethical use of information (including academic, social, media, and other content types)
- Select and use content-relevant devices and applications (on and off-line) to locate, evaluate, extract, organize, and share information for specific tasks working individually and collaboratively
- Use and evaluate a variety of devices and applications and explain why each is or is not accurate, relevant, or appropriate for a specific task
- Demonstrate appropriate use of in-text and reference list citations
- Evaluate and select appropriate search strategies to locate information and accomplish specific research tasks

Critical Thinking, Problem Solving, and Decision Making

4.1 Students effectively use technology for critical thinking, problem solving, and decision making
- Determine and use appropriate devices and applications to define problems, propose hypotheses, solve problems, and make decisions in real world situations, individually and collaboratively
- Use a variety of devices and applications to gather and analyze data and propose solutions to real-world problems and situations
- Problem-solve using help options/toolbars, online resources, etc.
- Evaluate the content, organization, design, use of citations, and presentation of technologically enhanced projects using provided or class-developed guidelines
- Determine and use age-appropriate technology to define problems, propose hypotheses, solve problems, make decisions, and reflect on work completed

Technology Operations & Concepts

5.1 Students demonstrate an understanding of technology systems
- Demonstrate responsible use of technology systems and applications
- Demonstrate an understanding of the role of technology in academic, workplace, government, social, and commercial contexts
- Demonstrate an understanding of the variety of ways to access content, the potential compatibility issues between those types of technology and ways to overcome those issues
- Explain why a particular device or application is appropriate for a given task
- Understand how infrastructure, electric resources, and connectivity are related

5.2 Students select and use hardware effectively and productively
- Understand and navigate the platform, version, properties, function, and interoperability of a variety of devices
- Navigate between multiple platforms and device types
- Identify and troubleshoot common hardware and application compatibility issues, including use of self-help features
- Demonstrate intermediate keyboarding and touchpad skills and techniques on a variety of devices
- Understand and use effective saving, backup, and recovery strategies

5.3 Students select and use applications effectively and productively
- Demonstrate proficiency in the use of word processing programs
- Demonstrate proficiency in the creation and use of spreadsheets
- Demonstrate basic proficiency in the creation and use of databases and/or electronic records
- Demonstrate proficiency in creation and use of presentations and multimedia
- Demonstrate intermediate proficiency using programming applications
- Demonstrate proficiency and safety in internet navigation and online communication
- Demonstrate an understanding of computer and internet security, including but not limited to e-commerce
- Identify and troubleshoot common hardware and application compatibility issues
- Develop and explain strategies for solving common application issues

MNPS Teachers & Principals

Mario Avila	Contigo Financial
Tom Bayersdorfer	MNPS
Kathy Bennett	MNPS
Glen Biggs	Alignment Nashville
Emily Bristow	MNPS
Abby Butler	MNPS
Nicole Chaput-Guizani	MNPS
Kevin Crane	Nashville Public Television
Mark Davison	Delek
Tracey Dill	United Way of Middle Tennessee
Giumarra Duhart	MNPS
Richard Frank	MNPS
Donna Gilley	MNPS
Travis Gregg	Trinisys
Colleen Grissom	MNPS
Laura Hansen	MNPS
Jack Hawkins	MNPS
Kelly Henderson	MNPS
Ty Hollett	Vanderbilt University
Colleen Hoy	C3 Consulting
Rob Jack	Parent
Robin Jocius	Vanderbilt University
Margie Johnson	MNPS
Mike Law	MNPS
Taffy Marsh	MNPS
Gaye Martin	MNPS
Kelly McKinney	MNPS
Michelle McVicker	MNPS
Dave Moore	MNPS
Chaney Mosley	MNPS
Chris Moth	Parent
Bill Nelson	Little Planet
Tischann Nye	MNPS
Chelsea Parker	PENCIL Foundation
Chuck Pirtle, Jr.	MNPS
Jill Pittman	MNPS
Doug Renfro	MNPS
JoAnn Scalf	Nashville Public Television
Adam Taylor	MNPS
John Teeter	MNPS

Susan Thompson   MNPS
Maddy Underwood   Student
Aleah White   MNPS
Michelle Wilcox   MNPS
Robert Wilson   MNPS
Tina Yahnian   MNPS
Steve Yazell   Telecom

Technology Literacy Standards – Final Review Board

Name	Title
Fred Carr	COO, MNPS
Kent Fourman	VP & CIO, Permanent General Companies
Liza Massey	President, Nashville Technology Council
Katherine McElroy	Partner, C3 Consulting
Kecia Ray	Executive Director, Learning Technology, MNPS
Brenda Steele	Executive Officer for Elementary Schools, MNPS
Jay Steele	Chief Academic Officer, MNPS
John Williams	Executive Director, Technology & Information Services, MNPS