

2009 Michigan Educational Technology Standards for Students

Grades 9-12



A goal of No Child Left Behind is that schools will *"assist every student in crossing the digital divide by ensuring that every student is technologically literate by the time the student finishes the eighth grade, regardless of the student's race, ethnicity, gender, family income, geographic location, or disability."*

The Michigan Educational Technology Standards for Students (METS-S) are aligned with the International Society for Technology in Education's (ISTE) National Educational Technology Standards for Students (NETS-S) and the Framework for 21st Century Learning. The Michigan standards are intended to provide educators with a specific set of learning expectations that can be used to drive educational technology literacy assessments.

These standards are best delivered by authentic instruction and assessment with direct curricular ties and it is intended that these Standards will be integrated into all content areas. The preparation of our students to be successful in the 21st Century is the responsibility of all educators.

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Technology Literacy

Technology literacy is the ability to responsibly use appropriate technology to communicate, solve problems, and access, manage, integrate, evaluate, and create information to improve learning in all subject areas and to acquire lifelong knowledge and skills in the 21st century.

Universal Design for Learning (UDL)

CAST (the Center for Applied Special Technology) offers three principles to guide UDL: provide multiple means of representation; provide multiple means of expression; and provide multiple means of engagement. CAST asserts that "These UDL Guidelines will assist curriculum developers (these may include teachers, publishers, and others) in designing flexible curricula that reduce barriers to learning and provide robust learning supports to meet the needs of all learners." Educational technologies can be valuable resources for educators in addressing the UDL guidelines. For additional information on UDL, visit the CAST website: www.cast.org.

9-12.CI. Creativity and Innovation—By the end of grade 12 each student will:

- 9-12.CI.1. apply advanced software features (e.g. built-in thesaurus, templates, styles) to redesign the appearance of word processing documents, spreadsheets, and presentations
- 9-12.CI.2. create a web page (e.g., Dreamweaver, iGoogle, Kompozer)
- 9-12.CI.3. use a variety of media and formats to design, develop, publish, and present projects (e.g., newsletters, web sites, presentations, photo galleries)

9-12.CC. Communication and Collaboration—By the end of grade 12 each student will:

- 9-12.CC.1. identify various collaboration technologies and describe their use (e.g., desktop conferencing, webinar, listserv, blog, wiki)
- 9-12.CC.2. use available technologies (e.g., desktop conferencing, e-mail, videoconferencing, instant messaging) to communicate with others on a class assignment or project
- 9-12.CC.3. collaborate in content-related projects that integrate a variety of media (e.g., print, audio, video, graphic, simulations, and models)
- 9-12.CC.4. plan and implement a collaborative project using telecommunications tools (e.g., ePals, discussion boards, online groups, interactive web sites, videoconferencing)
- 9-12.CC.5. describe the potential risks and dangers associated with online communications
- 9-12.CC.6. use technology tools for managing and communicating personal information (e.g., finances, contact information, schedules, purchases, correspondence)

9-12.RI. Research and Information Literacy—By the end of grade 12 each student will:

- 9-12.RI.1. develop a plan to gather information using various research strategies (e.g., interviews, questionnaires, experiments, online surveys)
- 9-12.RI.2. identify, evaluate, and select appropriate online sources to answer content related questions
- 9-12.RI.3. demonstrate the ability to use library and online databases for accessing information (e.g., MEL, Proquest, Info-source, United Streaming)
- 9-12.RI.4. distinguish between fact, opinion, point of view, and inference
- 9-12.RI.5. evaluate information found in selected online sources on the basis of accuracy and validity
- 9-12.RI.6. evaluate resources for stereotyping, prejudice, and misrepresentation
- 9-12.RI.7. understand that using information from a single internet source might result in the reporting of erroneous facts and that multiple sources must always be researched
- 9-12.RI.8. research examples of inappropriate use of technologies and participate in related classroom activities (e.g., debates, reports, mock trials, presentations)

9-12.CT. Critical Thinking, Problem Solving, and Decision Making —By the end of grade 12 each student will:

9-12.CT.1. use digital resources (e.g., educational software, simulations, models) for problem solving and independent learning

9-12.CT.2. analyze the capabilities and limitations of digital resources and evaluate their potential to address personal, social, lifelong learning, and career needs

9-12.CT.3. devise a research question or hypothesis using information and communication technology resources, analyze the findings to make a decision based on the findings, and report the results

9-12.DC. Digital Citizenship—By the end of grade 12 each student will:

9-12.DC.1. identify legal and ethical issues related to the use of information and communication technologies (e.g., properly selecting and citing resources)

9-12.DC.2. discuss possible long-range effects of unethical uses of technology (e.g., virus spreading, file pirating, hacking) on cultures and society

9-12.DC.3. discuss and demonstrate proper netiquette in online communications

9-12.DC.4. identify ways that individuals can protect their technology systems from unethical or unscrupulous users

9-12.DC.5. create appropriate citations for resources when presenting research findings

9-12.DC.6. discuss and adhere to fair use policies and copyright guidelines

9-12.TC. Technology Operations and Concepts—By the end of grade 12 each student will:

9-12.TC.1. complete at least one online credit, or non-credit, course or online learning experience

9-12.TC.2. use an online tutorial and discuss the benefits and disadvantages of this method of learning

9-12.TC.3. explore career opportunities, especially those related to science, technology, engineering, and mathematics and identify their related technology skill requirements

9-12.TC.4. describe uses of various existing or emerging technology resources (e.g., podcasting, webcasting, videoconferencing, , online file sharing, global positioning software)

9-12.TC.5. identify an example of an assistive technology and describe its potential purpose and use

9-12.TC.6. participate in a virtual environment as a strategy to build 21st century learning skills

9-12.TC.7. assess and solve hardware and software problems by using online help or other user documentation

9-12.TC.8. explain the differences between freeware, shareware, open source, and commercial software

9-12.TC.9. participate in experiences associated with technology-related careers

9-12.TC.10. identify common graphic, audio, and video file formats (e.g., jpeg, gif, bmp, mpeg, wav, wmv, mp3, avi, pdf)

9-12.TC.11. understand and discuss how assistive technologies can benefit all individuals

9-12.TC.12. demonstrate how to import/export text, graphics, or audio files

9-12.TC.13. proofread and edit a document using an application's spelling and grammar checking functions

For additional information and resources relating to the 2009 METS-S, please visit: <http://www.techplan.org/METS>