Digital Citizenship in STEM

STEM (science, technology, engineering, and mathematics) learning requires using various technologies such as computers, tablets, phones, digital apps, and websites. Engaging with technology appropriately and responsibly is important when using these technologies and resources.

What is Digital Citizenship?

Digital citizenship is the ability to navigate digital environments and act responsibly when using technology. Digital citizens positively contribute to society by managing their digital responsibilities including being aware of their own safety, following legal guidelines, using literacy skills, and maintaining their own health and wellness using available technologies.

Technology Intergration in STEM

Science

Students use technology to plan and conduct scientific investigations. They can ask a question, test their hypothesis, analyze data, create models, and share results.

Engineering

Students use technology to design and solve engineering problems. They can describe problems, find information, generate ideas, plan and test their ideas, create a model, analyze data, and share solutions.

Themes of Digital Citizenship

Digital Access
The equitable distribution of technology and online resources.

Digital Security and Privacy
The electronic precautions that are used to guarantee safety.

Digital Health and Wellness
A person's physical and psychological well-being in a digital world.

Digital Rights and Responsibilities
The requirements and freedoms extended to everyone in the digital world.

Digital Law
Actions and deeds that are associated with the creation of rules and policies that address issues related to the digital world.

Digital Commerce
The electronic buying and selling of goods.

Digital Communication
The electronic exchange of information.

Digital Fluency/Literacy
The process of understanding technology and its use.

Digital Etiquette
Electronic standards of conduct or procedures that have to do with thinking about others when using digital devices.

Digital Citizenship: Connections to STEM

Themes of Digital Citizenship	STEM When using various digital technology and resources to design, document, and share a plan for a scientific investigation or engineering design process, students should:
Digital Access The equitable distribution of technology and online resources	• Identify digital technologies currently available for use during STEM investigations or design processes. • Identify digital technologies that are accessible to various audiences. • Consider digital access when designing solutions to problems.
Digital Commerce The electronic buying and selling of goods	• Practice appropriate behaviors when buying or selling goods online. • Consider aspects of digital consumerism when identifying and defining engineering design problems and developing solutions (e.g., digital markets, communication, and safety and security).
Digital Communication The electronic exchange of information	• Use digital communication strategies to interact and communicate appropriately with peers, teachers, STEM experts, and other stakeholders. • Identify and consider the best options/formats for communicating to specific audiences, including accessibility. • Examples of digital communication include text, email, social media, online chat, video, audio, web conferencing, shared documents, and digital/online applications.
Digital Fluency/Literacy The process of understanding technology and its use	• Use critical thinking skills to access and communicate information online. • Identify various digital information resources. • Evaluate online sources and discern the difference between high-quality and poor-quality information.
Digital Etiquette Electronic standards of conduct or procedures that have to do with thinking about others when using digital devices	• Use technology appropriately and adhere to the social rules of conduct when engaging digitally. • Engage respectfully with others when interacting and communicating digitally. • Consider language and symbols, text format, humor and sarcasm, grammar and spelling, and the privacy of others when communicating digitally.

Themes of Digital Citizenship	STEM When using various digital technology and resources to design, document, and share a plan for a scientific investigation or engineering design process, students should:
Digital Law Actions and deeds that are associated with the creation of rules and policies that address issues related to the digital world	• Adhere to protective structures set by the local, state, or national authorities (e.g., Acceptable Use Policies) • Consider aspects of digital law when using or designing technologies to protect self and others from harm. • In addition to copyright laws, consider the Family Educational Rights and Privacy Act (FERPA), Child Internet Protection Act (CIPA), and Children's Online Privacy Protection Rule (COPPA) when using digital applications.
Digital Rights and Responsibilities The requirements and freedoms extended to those in the digital world	• When you have access to the Internet and digital products, make sure to help others. • When using online information or media, consider intellectual property laws such as copyright, fair use, creative commons, open source, and public domain use. • Cite sources and provide appropriate attribution to acknowledge intellectual property and creative work.
Digital Health and Wellness A person's physical and psychological well-being in a digital world	• To maintain balance, be mindful of time spent on screens and using technology. • Recognize potential physical, mental, and emotional impacts of technology use. • When defining engineering problems or developing solutions, consider the physical, mental, and emotional impact of digital technology solutions on society.
Digital Security and Privacy The electronic precautions that are used to guarantee safety	• Use appropriate digital safety practices and protocols. • To protect personal information or data, use strong passwords, do not share them, and save them through encryption. • When collecting personal data from others or creating digitally based solutions to engineering problems, consider security and privacy. • Identify cybersecurity problems such as phishing, malware, password attacks, identity theft, and hacking, and develop possible solutions.

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