ESSENTIAL TECHNOLOGY CONCEPTS AND SKILLS FOR HIGH SCHOOL STUDENTS

International Society for Technology in Education

The Iowa Department of Education adopted the *ISTE Essential Technology Concepts and Skills* as the Technology Standards for the *Iowa Core Curriculum.* These same concepts and skills were recommended for inclusion in the *IF-A Technology Plan* by the IF-A Technology Team, and were approved by the Iowa Falls and Alden Boards of Education.

1) ***Demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.***

Apply existing knowledge to generate new ideas, products, or processes.

- Students design, develop, create, and/or test self-generated digital learning objects that are accessible by as many users as possible, and demonstrate knowledge and skills related to curriculum content.

Create original works as a means of personal or group expression.

- Students individually or collaboratively create media-rich products to be displayed, published, or performed for a variety of audiences.

Use models and simulations to explore complex systems and issues.

- Students employ curriculum-specific, technology-based simulations to aid them in understanding complex, real-world systems. Simulation studies include formulating problems, developing models, running models, and analyzing outputs that help predict behaviors and outcomes.

Identify trends and forecast possibilities.

- Students investigate complex global issues, make informed choices based on capabilities and limitations of technology systems, resources, and services, and apply this learning to personal and workplace needs.

2) ***Use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.***

Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.

- Using technology, students interact and collaborate with peers, experts, and others to contribute to a content-related, media-rich knowledge base by compiling, synthesizing, producing, and disseminating information, models, and other creative works.

Communicate information and ideas effectively to multiple audiences using a variety of media and formats.

- Students use technology tools and resources, including distance and distributed education, for effectively exchanging information with a variety of audiences in an array of media-rich formats.

Develop cultural understanding and global awareness by engaging with learners of other cultures.

- Students use a variety of existing online tools and emerging technologies for communicating with and learning about people of other cultures. Students investigate, communicate, and understand cultural norms manifested in music, literature, painting and sculpture, and theater and film, resulting in greater global awareness.

Appropriately contribute to project teams to produce original works or solve problems.

- Students share knowledge and skills with local or distance teams of peers, experts, or others using technological tools and resources to create collaborative works and/or innovative sustainable solutions.

3) ***Apply digital tools to gather, evaluate, and use information.***

Plan strategies to guide inquiry.

- Students design a process that establishes criteria for selecting digital tools and resources to use for in-depth investigation of a real-world task and justify the selection based on efficiency and effectiveness.

Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.

- Students model legal and ethical behaviors when using information and technology by properly selecting, acquiring, and citing resources for research, information analysis, problem solving, and decision making in content learning.

Evaluate and select information sources and digital tools based on the appropriateness to specific tasks.

- Students access information efficiently and effectively, evaluate information critically and competently, and use digital information and tools accurately and creatively for the issue or problem at hand.

Process data and report results.

- Students use technological tools to select, organize, and analyze data, convert that information into easily understood knowledge, and effectively convey the results to an intended audience.

4) *Demonstrate critical thinking skills using appropriate tools and resources to plan and conduct research, manage projects, solve problems and make informed decisions.*

Identify and define authentic, real-world problems and significant questions for investigation.

- Students identify global issues and analyze capabilities and limitations of current and emerging technology resources in order to develop and refine questions to investigate.

Plan and manage activities to develop a solution or complete a project

- Students effectively use multiple technologies and resources to develop a systematic plan for conducting research in order to assess potential sustainable solutions, or to develop a complete product to demonstrate knowledge and skills.

Collect and analyze data to identify trends, solutions, or make informed decisions.

- Students use technology to gather appropriate data, analyze its application to a task, and assess its effectiveness in order to design, develop, and test possible solutions that assist students in making decisions.

Use multiple processes and diverse perspectives to explore alternative solutions.

- Students use multiple perspectives to analyze and evaluate information from a variety of technological resources. Students critically assess numerous solutions and investigate them from differing viewpoints.

5) *Understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.*

Advocate and practice safe, legal, and responsible use of information and technology at an age-appropriate level.

- Students use technology efficiently and in a manner that does not harm them or others. Their choices demonstrate and advocate for legal and ethical behaviors among peers, family, and community regarding the use of technology and information. Students understand the concept of acceptable use of copyrighted materials, and how disregarding intellectual property affects others.

Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.

- Students willingly and routinely use online resources to meet needs for collaboration, research, publication, communication, and productivity. Evidence for a positive attitude includes a proclivity to help others with the use of technology in their learning.

Demonstrate personal responsibility for lifelong learning.

- Students use their skills to identify capabilities and limitations of contemporary and emerging technology resources and assess the potential of these systems and services to address personal, lifelong learning, and workplace needs. They use this knowledge to make informed choices among technology systems, resources, and services.

Exhibit leadership for digital citizenship.

- Students use their skills to identify capabilities and limitations of contemporary and emerging technology resources and assess the potential of these systems and services to address personal, lifelong learning, and workplace needs. They use this knowledge to make informed choices among technology systems, resources, and services.

6) Essential Concept and/or Skill: ***Demonstrate a sound understanding of technology concepts, systems and operations.***

Understand and use technology systems

- Students adapt to evolving technology systems and apply them for everyday use. They also interpret the underlying structure of the system so it can be used for multiple purposes and applied to unique situations.

Select and use applications effectively and productively

- Students select and apply technology tools for research, information analysis, problem solving, and decision-making. Students use technology tools and resources for managing and communicating personal and professional information (e.g., finances, schedules, addresses, purchases, correspondence).

Troubleshoot systems and applications.

- Students utilize a working knowledge of technology or technological support services to identify a problem/issue and its solution.

Transfer current knowledge to learning of new technologies.

- Students apply what they know of one technology to intuitively utilize other technologies.

Sources:

a) ISTE: International Society for Technology in Education

b) Iowa Common Core
c) IF-A Technology Plan

Notes: