Florida CTE

Engineering & Technology Education (2023-24): Exploration of Communications Technology (8600030)

Demonstrate an understanding of the characteristics and scope of technology.--The student will be able to: 1	**1** Develop new products and systems to solve problems or to help do things that could not be done without the help of technology. 1.01 **2** Describe the development of technology as a human activity that is the result of individual or collective needs and the ability to be creative. 1.02 **3** Explain how technology is closely linked with creativity, which has resulted in innovation. 1.03 **4** (Explain, Demonstrate) how corporations can often create demand for a product by bringing it onto the market and advertising it. 1.04
Demonstrate an understanding of the core concepts of technology.--The student will be able to: 2	**1** Identify technological systems including input, processes, output, and, at times, feedback. 2.01 **2** Apply systems thinking, involving considering how every part relates to others. 2.02
Demonstrate an understanding of the relationships among technologies and the connection between technology and other fields of study.--The student will be able to: 3	**1** Apply a product, system, or environment developed for one setting in another setting. 3.01 **2** Explain how knowledge gained from other fields of study has a direct effect on the development of technological products and systems. 3.02
Demonstrate an understanding of the cultural, social, economic, and political	**1** Describe the ways that the use of communication technologies affects humans, including their safety, comfort, choices, and attitudes. 4.01

effects of technology.--The student will be able to: 4	**2** Explain that communication technology, by itself, is neither good nor bad; but decisions about the use of products and systems can result in desirable or undesirable consequences. 4.02
	3 Describe ethical issues associated with the development and use of communication technology. 4.03
	4 Describe the economic, political, and cultural issues that are influenced by the development and use of communication technology. 4.04
Demonstrate an understanding of the effects of technology on the environment.--The student will be able to: 5	**1** Describe the management of waste produced by communication technological systems as an important societal issue. 5.01
	2 Identify how communication technologies can be affected by natural disaster. 5.02
	3 Make decisions about the development and use of communication technologies that put environmental and economic concerns in direct competition with one another. 5.03
Demonstrate an understanding of the role of society in the development and use of technology.--The student will be able to: 6	**1** Describe the development of technologies that has resulted from the demands, values, and interests of individuals, businesses, industries, and societies. 6.01
	2 Describe changes in society and the creation of new needs and wants caused by the use of inventions and innovations. 6.02
	3 Describe social and cultural priorities and values that are reflected in technological devices. 6.03
	4 Explain how meeting societal expectations is the driving force behind the acceptance and use of products and systems. 6.04
Demonstrate an understanding of the influence of technology on history.--The student will be able to: 7	**1** Describe inventions and innovations that have evolved by using slow and methodical processes of tests and refinements. 7.01
	2 Explain how the specialization of function has been at the heart of many technological improvements. 7.02
	3 Explain that in the past, an invention or innovation was not usually developed with the knowledge of science. 7.03
Demonstrate an understanding of the attributes of design.--The student will be able to: 8	**1** Use design as a creative planning process that leads to useful products and systems. 8.01
	2 Explain why there is no perfect design. 8.02
	3 Evaluate criteria and constraints that are requirements for a design. 8.03

Demonstrate an understanding of engineering design.--The student will be able to: 9	1 **Utilize the design process involving a set of steps, which can be performed in different sequences and repeated as needed.** 9.01
	2 **Employ brainstorming as a group problem-solving design process in which each person in the group presents his or her ideas in an open forum.** 9.02
	3 **Model, test, evaluate and modify designs to transform ideas into practical solutions.** 9.03
Demonstrate an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.--The student will be able to: 10	1 **Use troubleshooting as a problem-solving method used to identify the cause of a malfunction in a technological system.** 10.01
	2 **Describe invention as a process of turning ideas and imagination into devices and systems and innovation as the process of modifying an existing product or system to improve it.** 10.02
	3 **Identify technological problems that are best solved through experimentation.** 10.03
Demonstrate the abilities to apply the design process.--The student will be able to: 11	1 **Apply a design process to solve problems in and beyond the laboratory-classroom.** 11.01
	2 **Specify criteria and constraints for the design.** 11.02
	3 **Make two-dimensional and three-dimensional representations of the designed solution.** 11.03
	4 **Test and evaluate the design in relation to pre-established requirements, such as criteria and constraints, and refine as needed.** 11.04
	5 **Make a product or system and document the solution.** 11.05
Demonstrate the abilities to use and maintain technological products and systems.--The student will be able to: 12	1 **Use information provided in manuals, protocols, or by experienced people to see and understand how things work.** 12.01
	2 **Use tools, materials, and machines safely to diagnose, adjust, and repair systems.** 12.02
	3 **Use computers and calculators in various applications.** 12.03
	4 **Operate and maintain systems in order to achieve a given purpose.** 12.04
Demonstrate the abilities to assess the impact of products and systems.--The student will be able to: 13	1 **Design and use instruments to gather data.** 13.01
	2 **Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology.** 13.02

	3 Identify trends and monitor potential consequences of technological development. 13.03
	4 Interpret and evaluate the accuracy of the information obtained and determine if it is useful. 13.04
Demonstrate an understanding of and be able to select and use information and communication technologies.--The student will be able to: 17	1 Create information and communication that allow information to be transferred from human to human, human to machine, machine to machine, and machine to human. 17.01
	2 Consider factors that influence the design of a message, such as the intended audience, medium, purpose, and nature of the message. 17.02
	3 Use symbols, measurements, and drawings to promote clear communication by providing a common language to express ideas. 17.03
Demonstrate proper and safe procedures while working with technological tools, apparatus, equipment, systems, and materials.--The student will be able to: 21	1 Follow classroom/laboratory safety rules and procedures. 21.01
	2 Demonstrate good housekeeping at workstations within a classroom/laboratory. 21.02
	3 Conduct classroom/laboratory activities and equipment operations in a safe manner. 21.03
	4 Exercise care and respect for all tools, equipment, and materials. 21.04
	5 Select appropriate tools, machines, and equipment to accomplish a given task. 21.05
	6 Identify color-coding safety standards. 21.06
	7 Safely use hand tools and power equipment. 21.07
	8 Explain fire prevention and safety precautions and practices for extinguishing fires. 21.08
	9 Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment. 21.09
Exhibit positive human relations and leadership skills.--The student will be able to: 22	1 Perform roles in a student personnel system or in a career and technical student organization (CTSO). 22.01
	2 Work cooperatively with others. 22.02
Discuss individual interests and aptitudes as they relate to a	1 Identify individual strengths and weaknesses. 23.01
	2 Discuss individual interests related to a career. 23.02

career.--The student will be able to: 23	3 List occupations, job requirements, and job opportunities in communication technology. 23.03
	4 List academic and career programs at the secondary levels in communication technology. 23.04
Demonstrate an application of basic digital publishing techniques.--The student will be able to: 24	1 Utilize digital publishing to combine input, editing, and output into a finished product. 24.01
	2 Utilize the components of layouts including type, typography and illustration to digitally manipulate the elements of a published product. 24.02
	3 Develop a web page using appropriate digital software. 24.03
	4 Create a document on a digital publishing system by inputting existing digitized graphics or by digitizing original art or photographs on a digitizing scanner. 24.04
Identify and describe the major types of printing techniques used in print production.--The student will be able to: 25	1 Identify and explain standard printing processes including but not limited to: relief, gravure, screen process, and lithographic printing. 25.01
	2 Utilize common design principles to create camera ready art. 25.02
	3 Produce a printed product using a current printing method. 25.03
	4 Utilize appropriate finishing techniques on a printed project. 25.04
Identify and demonstrate the role of electronic communication.--The student will be able to: 26	1 Explain how to create code, transmit, and receive messages using electronic devices. 26.01
	2 List and explain the common communication categories. 26.02
	3 Define and explain the use of telecommunications in everyday life. 26.03
	4 Utilize a telecommunications device to transmit and receive an electronic message. 26.04
	5 Produce an audio and/or visual product using electronic communication technology. 26.05
Identify and demonstrate the role of optical technology.--The student will be able to: 27	1 Identify the purposes and property of light as used in communication technology. 27.01
	2 Explain how light signals are transmitted and received via different optical devices to include but not limited to: fiber optics, satellite communication, bandwidth, laser, and photography. 27.02
	3 Generate a product using optical technology. 27.03