2020 New Jersey Student Learning Standards – Computer Science and Design Thinking

Taito LEARNING

New Jersey Student Learning Standards

2020 New Jersey Student Learning Standards – Computer Science and Design Thinking	Performance Expectations	Cyberbullying	Copyright	Digital Footprint	Reliable Information	Data Connectivity	Digital Citizen's Basic Skills	Selecting Correct Device	Selecting Correct Software	Office Software	Troubleshooting	Digital Progress	Critical Thinking †	Data	Data collection tools †	Basics of AI †	CodeMonkey Coding Curriculum
8.1 COMPUTER SCIENCE BY THE END OF GRADE 5																	
Computing Systems																	
Computing devices may be connected to other devices to form a system as a way to extend their capabilities.																	
8.1.5.CS.1	Model how computing devices connect to other components to form a system.							•						•			
Software and hardware work together as a system to accomplish tasks (e.g., sending, receiving, processing, and storing units of information).																	
8.1.5.CS.2	Model how computer software and hardware work together as a system to accomplish tasks.							•									
Shared features allow for common troubleshooting strategies that can be effective for many systems.																	
8.1.5.CS.3	Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.										•						
Networks and the Internet																	
Information needs a physical or wireless path to travel to be sent and received.																	
8.1.5.NI.1	Develop models that successfully transmit and receive information using both wired and wireless methods.																
Distinguishing between public and private information is important for safe and secure online interactions. Information can be protected using various security measures (i.e., physical and digital).																	
8.1.5.NI.2	Describe physical and digital security measures for protecting sensitive personal information.																
Impacts of Computing																	
The development and modification of computing technology is driven by individual's needs and wants and can affect individuals differently.																	
8.1.5.IC.1	Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes.						•					•					

2020 New Jersey Student Learning Standards – Computer Science and Design Thinking

Taito LEARNING

New Jersey Student Learning Standards

2020 New Jersey Student Learning Standards – Computer Science and Design Thinking	Performance Expectations	Cyberbullying	Copyright	Digital Footprint	Reliable Information	Data Connectivity	Digital Citizen's Basic Skills	Selecting Correct Device	Selecting Correct Software	Office Software	Troubleshooting	Digital Progress	Critical Thinking †	Data	Data collection tools †	Basics of AI †	CodeMonkey Coding Curriculum
8.1.5.IC.2	Identify possible ways to improve the accessibility and usability of computing technologies to address the diverse needs and wants of users.											•*					
Data & Analysis																	
Data can be organized, displayed, and presented to highlight relationships.																	
8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.													•			
The type of data being stored affects the storage requirements.																	
8.1.5.DA.2	Compare the amount of storage space required for different types of data.																
Individuals can select, organize, and transform data into different visual representations and communicate insights gained from the data.																	
8.1.5.DA.3	Organize and present collected data visually to communicate insights gained from different views of the data.													•			
8.1.5.DA.4	Organize and present climate change data visually to highlight relationships or support a claim.																
Many factors influence the accuracy of inferences and predictions.																	
8.1.5.DA.5	Propose cause and effect relationships, predict outcomes, or communicate ideas using data.														•		
Algorithms & Programming																	
Different algorithms can achieve the same result. Some algorithms are more appropriate for a specific use than others.																	
8.1.5.AP.1	Compare and refine multiple algorithms for the same task and determine which is the most appropriate.																•**
Programming languages provide variables, which are used to store and modify data.																	
8.1.5.AP.2	Create programs that use clearly named variables to store and modify data.																•**

2020 New Jersey Student Learning Standards – Computer Science and Design Thinking

Taito LEARNING

New Jersey Student Learning Standards

2020 New Jersey Student Learning Standards – Computer Science and Design Thinking	Performance Expectations	Cyberbullying	Copyright	Digital Footprint	Reliable Information	Data Connectivity	Digital Citizen's Basic Skills	Selecting Correct Device	Selecting Correct Software	Office Software	Troubleshooting	Digital Progress	Critical Thinking †	Data	Data collection tools †	Basics of AI †	CodeMonkey Coding Curriculum
A variety of control structures are used to change the flow of program execution (e.g., sequences, events, loops, conditionals).																	
8.1.5.AP.3	Create programs that include sequences, events, loops, and conditionals.																•**
Programs can be broken down into smaller parts to facilitate their design, implementation, and review. Programs can also be created by incorporating smaller portions of programs that already exist.																	
8.1.5.AP.4	Break down problems into smaller, manageable sub-problems to facilitate program development.																•**
8.1.5.AP.5	Modify, remix, or incorporate pieces of existing programs into one's own work to add additional features or create a new program.																•**
Individuals develop programs using an iterative process involving design, implementation, testing, and review.																	
8.1.5.AP.6	Develop programs using an iterative process, implement the program design, and test the program to ensure it works as intended.																
8.2 DESIGN THINKING BY THE END OF GRADE 5																	
Engineering Design																	
Engineering design is a systematic and creative process of communicating and collaborating to meet a design challenge. Often, several design solutions exist, each better in some way than the others.																	
8.2.5.ED.1	Explain the functions of a system and its subsystems.													•			
8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.														•*		
8.2.5.ED.3	Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.														•*		
Engineering design requirements include desired features and limitations that need to be considered.																	
8.2.5.ED.4	Explain factors that influence the development and function of products and systems (e.g., resources, criteria, desired features, constraints).											•*					

2020 New Jersey Student Learning Standards – Computer Science and Design Thinking

Taito LEARNING

New Jersey Student Learning Standards

2020 New Jersey Student Learning Standards – Computer Science and Design Thinking	Performance Expectations	Cyberbullying	Copyright	Digital Footprint	Reliable Information	Data Connectivity	Digital Citizen's Basic Skills	Selecting Correct Device	Selecting Correct Software	Office Software	Troubleshooting	Digital Progress	Critical Thinking †	Data	Data collection tools †	Basics of AI †	CodeMonkey Coding Curriculum
8.2.5.ED.5	Describe how specifications and limitations impact the engineering design process.																
8.2.5.ED.6	Evaluate and test alternative solutions to a problem using the constraints and trade-offs identified in the design process.																
Interaction of Technology and Humans																	
Societal needs and wants determine which new tools are developed to address real-world problems.																	
8.2.5.ITH.1	Explain how societal needs and wants influence the development and function of a product and a system.											•*					
A new tool may have favorable or unfavorable results as well as both positive and negative effects on society. Technology spurs new businesses and careers.																	
8.2.5.ITH.2	Evaluate how well a new tool has met its intended purpose and identify any shortcomings it might have.																
8.2.5.ITH.3	Analyze the effectiveness of a new product or system and identify the positive and/or negative consequences resulting from its use.																
8.2.5.ITH.4	Describe a technology/tool that has made the way people live easier or has led to a new business or career.						•					•					
Nature of Technology																	
Technology innovation and improvement may be influenced by a variety of factors. Engineers create and modify technologies to meet people's needs and wants; scientists ask questions about the natural world.																	
8.2.5.NT.1	Troubleshoot a product that has stopped working and brainstorm ideas to correct the problem.live easier or has led to a new business or career.										•						
8.2.5.NT.2	Identify new technologies resulting from the demands, values, and interests of individuals, businesses, industries, and societies.																
8.2.5.NT.3	Redesign an existing product for a different purpose in a collaborative team.																

2020 New Jersey Student Learning Standards – Computer Science and Design Thinking

Taito LEARNING

New Jersey Student Learning Standards

2020 New Jersey Student Learning Standards – Computer Science and Design Thinking	Performance Expectations	Cyberbullying	Copyright	Digital Footprint	Reliable Information	Data Connectivity	Digital Citizen's Basic Skills	Selecting Correct Device	Selecting Correct Software	Office Software	Troubleshooting	Digital Progress	Critical Thinking †	Data	Data collection tools †	Basics of AI †	CodeMonkey Coding Curriculum
8.2.5.NT.4	Identify how improvement in the understanding of materials science impacts technologies.												•				
Effects of Technology on the Natural World																	
The technology developed for the human designed world can have unintended consequences for the environment. Technology must be continually developed and made more efficient to reduce the need for non-renewable resources.																	
8.2.5.ETW.1	Describe how resources such as material, energy, information, time, tools, people, and capital are used in products or systems.																
8.2.5.ETW.2	Describe ways that various technologies are used to reduce improper use of resources.																
8.2.5.ETW.3	Explain why human-designed systems, products, and environments need to be constantly monitored, maintained, and improved.																
8.2.5.ETW.4	Explain the impact that resources, such as energy and materials used to develop technology, have on the environment.																
8.2.5.ETW.5	Identify the impact of a specific technology on the environment and determine what can be done to increase positive effects and to reduce any negative effects, such as climate change.																
Ethics & Culture																	
The availability of technology for essential tasks varies in different parts of the world.																	
8.2.5.EC.1	Analyze how technology has contributed to or reduced inequities in local and global communities and determine its short- and long-term effects.						•										

* Standard aligned using offline materials
** CodeMonkey Coding Curriculum sold separately for current customers