PLTW Launch Standards Guide

Missouri Grades K-5 Computer Science Performance Standards

PLTW Launch (PreK-5) is designed to support your learning needs. The modules are developed to ensure an unmatched experience, combining three-dimensional learning; unique, problem-based instructional approach; real-world applied learning; as well as Spanish language options — all in one program.

This Standards Guide shows how each PLTW Launch module supports the Missouri Grades K-5 Computer Science Performance Standards. Because schools need the flexibility to implement the curriculum in the way that best meets their students' needs, PLTW Launch is designed to support a wide range of implementations. Whether the modules are offered in all classrooms, as a specials rotation, as grade level rotations, as an after-school program, or even as a summer learning implementation, PLTW Launch offers the flexibility to meet your needs.

Use this Crosswalk in combination with the Module Descriptions PDF as planning tools to explore how you can implement PLTW Launch as your elementary learning solution.

PLTW LAUNCH

Grades K-2 Computer Science Performance Standards

	Subconcept	Kindergarten	1st Grade	2nd Grade
Computing Systems	Devices	**K.CS.D.01** With guidance, follow directions and make appropriate choices to use computing devices to perform a variety of tasks. **Animals and Algorithms (K)**	**1.CS.D.01** With guidance, select and use a computing device to perform a variety of tasks for an intended outcome. **Animated Storytelling (1)**	**2.CS.D.01** Select and use a computing device to perform a variety of tasks for an intended outcome. **Grids and Games (2)**
	Hardware & Software	**K.CS.HS.01** Use appropriate terminology in naming and describing the function of common computing devices and components (e.g., mouse is used to control the cursor, desktop computer, laptop computer, tablet device, monitor, keyboard, mouse, printer). **Animated Storytelling (1)**	**1.CS.HS.01** Use appropriate terminology to locate and identify common computing devices and components, in a variety of environments (e.g., desktop computer, laptop computer, tablet device, monitor, keyboard, mouse, printer). **Animated Storytelling (1), Grids and Games (2)**	**2.CS.HS.01** Identify the components of a computer system and what the basic functions are (e.g., hard drive and memory) as well as peripherals (e.g., printers, scanners, external hard drives) and external storage features and their uses (e.g., cloud storage). **Standard not currently supported**
		K.CS.HS.02 With guidance, choose appropriate software to perform a variety of tasks. **Standard not currently supported**	**1.CS.HS.02** With little support, choose appropriate software to perform a variety of tasks. **Standard not currently supported**	**2.CS.HS.02** Independently choose appropriate software to perform a variety of tasks. **Standard not currently supported**
	Troubleshooting	**K.CS.T.01** Recognize that computing systems might not work as expected and learn to use accurate terminology to identify simple hardware or software problems (e.g., volume turned down on turned down on headphones, monitor turned off, keyboard not working, mouse not working). **Standard not currently supported**	**1.CS.T.01** Identify, using accurate terminology, simple hardware and software problems that may occur during use (e.g., app or program is not working as expected, no sound is coming from the device, caps lock turned on). **Animated Storytelling (1)**	**2.CS.T.01** Identify using accurate terminology, simple hardware and software problems that may occur during use (e.g., app or program is not working as expected, no sound is coming from the device, caps lock turned on) and discuss problems with peers and adults. **Grids and Games (2)**
Networks and the Internet	Network Communication & Organization	**K.NI.NCO.01** Discuss that computing devices can be connected together. (e.g., printers connect to devices, phone/tablet share information). **Standard not currently supported**	**1.NI.NCO.01** Recognize that by connecting computing devices together they can share information (e.g., remote storage, printing, the internet). **Standard not currently supported**	**2.NI.NCO.01** Recognize that computing devices can be connected at various scales (e.g., Bluetooth, Wi-Fi, hotspot, LAN, WAN, peer-to-peer). **Standard not currently supported**
	Cybersecurity	**K.NI.C.01** Discuss what passwords are and why we do not share them with others. With guidance, use passwords to access technological devices, apps, etc. **Standard not currently supported**	**1.NI.C.01** Identify what passwords are and explain why they are not shared. Discuss what makes a password strong. Independently, use passwords to access technological devices, apps, etc. **Animated Storytelling (1)**	**2.NI.C.01** Recognize what passwords are and why we do not share them. Explain why we use them and why we use strong passwords to protect devices and information from unauthorized access. **Grids and Games (2)**
Data & Analytics	Storage	**K.DA.S.01** With guidance, locate, open, modify and save an existing file with a computing device. **Animals and Algorithms (K)**	**1.DA.S.01** With guidance locate, open, modify and save an existing file, use appropriate file-naming conventions and recognize that the file exists within an organizational structure (e.g., drive, folder, file). **Animated Storytelling (1)**	**2.DA.S.01** With guidance, create, copy, locate, modify and delete a file on a computing device, use appropriate file naming conventions and recognize that the file exists within an organizational structure (e.g., drive, folder, file) define the information stored as data. **Grids and Games (2)**

Grades K-2 Computer Science Performance Standards

	Subconcept	Kindergarten	1st Grade	2nd Grade
Data & Analytics	Collection, Visualization & Transformation	**K.DA.CVT.01** With guidance, collect data and present it visually. **Standard not currently supported**	**1.DA.CVT.01** With guidance, collect data and present it two different ways. **Animated Storytelling (1)**	**2.DA.CVT.01** With guidance, collect and present the same data in various visual formats. **Grids and Games (2)**
	Inference & Models	**K.DA.IM.01** With guidance, draw conclusions and make predictions based on picture graphs or patterns (e.g., make predictions based on weather data presented in a picture graph or complete a pattern). **Standard not currently supported**	**1.DA.IM.01** With guidance, identify and interpret data from a chart or graph (visualization) in order to make a prediction, with or without a computing device. **Animated Storytelling (1)**	**2.DA.IM.01** With guidance, construct and interpret data and present it in a chart or graph (visualization) in order to make a prediction, with or without a computing device. **Standard not currently supported**
Algorithms & Programming	Algorithms	**K.AP.A.01** With guidance, model daily processes and follow algorithms (sets of step-by-step instructions) to complete tasks verbally, kinesthetically, with robot devices or a programing language. **Animals and Algorithms (K)**	**1.AP.A.01** With guidance, model daily processes and follow algorithms (sets of step-by-step instructions) to complete tasks verbally, kinesthetically, with robot devices or a programing language. **Animated Storytelling (1)**	**2.AP.A.01** With guidance, model daily processes by creating and following algorithms (sets of step-by-step instructions) to complete tasks verbally, kinesthetically, with robot devices or a programing language. **Grids and Games (2)**
	Variables	**K.AP.V.01** With guidance, recognize that computers represent different types of data using numbers or other symbols. **Animals and Algorithms (K)**	**1.AP.V.01** With guidance, model the way that a program accesses stored data using a variable name. **Animated Storytelling (1)**	**2.AP.V.01** Model the way a computer program manipulates grade level appropriate data (e.g., print, numbers, kinesthetic movement, symbols, robot manipulatives). **Grids and Games (2)**
	Control	**K.AP.C.01** With guidance, independently or collaboratively create programs to accomplish tasks using a programming language, robot device or unplugged activity that includes sequencing (i.e., emphasizing the beginning, middle and end). **Animals and Algorithms (K)**	**1.AP.C.01** With guidance, independently or collaboratively create programs to accomplish tasks using a programming language, robot device or unplugged activity that includes sequencing and repetition. **Animated Storytelling (1)**	**2.AP.C.01** With guidance, create programs using a programming language, robot device or unplugged activity that utilize sequencing and simple looping to solve a problem or express ideas both independently and collaboratively. **Grids and Games (2)**
	Program Development	**K.AP.PD.01** With guidance, create a grade- level appropriate artifact to illustrate thoughts, ideas or sequence of events (step-by-step) manner (e.g., story map, storyboard, sequential graphic organizer). **Animals and Algorithms (K)**	**1.AP.PD.01** Independently or with guidance, create a grade level appropriate document of the plan, ideas and sequence of events (step-by- step) manner (e.g., story map, storyboard, sequential graphic organizer) to illustrate what the program will do. **Animated Storytelling (1)**	**2.AP.PD.01** Independently or with guidance, create a grade level appropriate document of the plan, ideas and sequence of events (step-by- step) manner (e.g., story map, storyboard, sequential graphic organizer) to illustrate what the program will do. **Grids and Games (2)**
		K.AP.PD.02 Independently or with guidance give credit to ideas, creations and solutions of others while developing algorithms. **Standard not currently supported**	**1.AP.PD.02** Independently or with guidance give credit to ideas, creations and solutions of others while writing and/or developing programs. **Animated Storytelling (1)**	**2.AP.PD.02** Give credit to ideas, information, creations and solutions of others while writing and developing programs. **Standard not currently supported**

Grades K-2 Computer Science Performance Standards

	Subconcept	Kindergarten	1st Grade	2nd Grade
Algorithms & Programming	Program Development	**K.AP.PD.03** With guidance, independently or collaboratively debug algorithms using a programming language and/or unplugged activity that includes sequencing. **Animals and Algorithms (K)**	**1.AP.PD.03** With guidance, independently or collaboratively debug programs using a programming language and/or unplugged activity that includes sequencing and simple loops. **Animated Storytelling (1)**	**2.AP.PD.03** Independently and collaboratively, debug programs, which include sequencing and simple loops, to accomplish tasks as a means of creative expression or problem solving using a programming language and/or unplugged activities. **Grids and Games (2)**
		K.AP.PD.04 Use correct terminology (beginning, middle, end) in the development of an algorithm to solve a simple problem. **Animals and Algorithms (K)**	**1.AP.PD.04** Use correct terminology (first, second, third) and explain the choices made in the development of an algorithm to solve a simple problem. **Animated Storytelling (1)**	**2.AP.PD.04** Use correct terminology (e.g., debug, program input/output, code) to explain the development of an algorithm to solve a problem in an unplugged activity, hands on manipulatives or a programming language. **Grids and Games (2)**
Impacts of Computing	Culture	**K.IC.C.01** Discuss different ways in which types of technologies are used in daily life. **Standard not currently supported**	**1.IC.C.01** Identify how people use different types of technologies in their daily work and personal lives. **Animated Storytelling (1)**	**2.IC.C.01** Identify and describe how people use many types of technologies in their daily work and personal lives. **Grids and Games (2)**
	Social Interactions	**K.IC.SI.01** With guidance, identify appropriate manners while participating in an online environment and online behaviors. **Standard not currently supported**	**1.IC.SI.01** With guidance, identify appropriate and inappropriate behavior. Act responsibly while participating in an online community and know how to report concerns of cyberbullying. **Standard not currently supported**	**2.IC.SI.01** Develop a code of conduct, explain and practice grade-level appropriate behavior and responsibilities while participating in an online community. Identify and report inappropriate behavior and know how to report concerns of cyberbullying. **Programming Patterns (3)**
	Safety, Law & Ethics	**2.IC.SI.01** Develop a code of conduct, explain and practice grade-level appropriate behavior and responsibilities while participating in an online community. Identify and report inappropriate behavior and know how to report concerns of cyberbullying. **Standard not currently supported**	**1.IC.SLE.01** Work respectfully and responsibly with others online. Learn what information that is put online is appropriate and can start a digital footprint. **Grids and Games (2)**	**2.IC.SLE.01** Identify safe and unsafe examples of online communications. Learn that the information put online leaves a digital footprint. **Programming Patterns (3)**

Grades 3-5 Computer Science Performance Standards

	Subconcept	3rd Grade	4th Grade	5th Grade
Computer Systems	Hardware & Software	**3.CS.HS.01** Model how information flows through hardware and software to accomplish tasks. **Programming Patterns (3)**	**4.CS.HS.01** Model that information is translated, transmitted and processed in order to flow through hardware and software. **Input/Output: Computer Systems (4)**	**5.CS.HS.01** Model that information is translated into bits in order to transmit and process between software to accomplish tasks. **Standard not currently supported**
	Troubleshooting	**3.CS.T.01** Identify, using accurate terminology, simple hardware and software problems that may occur during everyday use, discuss problems with peers and adults and apply strategies for solving these problems (e.g., refresh the screen, closing and reopening an application or file, unmuting or adjusting the volume on headphones). **Standard not currently supported**	**4.CS.T.01** Identify, using accurate terminology, simple hardware and software problems that may occur during everyday use, discuss problems with peers and adults and apply strategies for solving these problems (e.g., rebooting the computing device, checking the power, force shut down of an application). **Standard not currently supported**	**5.CS.T.01** Identify, using accurate terminology, simple hardware and software problems that may occur during everyday use. Discuss problems with peers and adults, apply strategies for solving these problems and explain why the strategy should work. **Standard not currently supported**
Networks & the Internet	Network Communication & Organization	**3.NI.NCO.01** Recognize how information changes when sent and received over physical or wireless paths. (Information is broken into smaller parts, sent to the destination and then reassembled into a whole.) **Standard not currently supported**	**4.NI.NCO.01** Explain how information is broken down into packets, transmitted through multiple computing devices over networks and the internet and reassembled at the destination. **Input/Output: Computer Systems (4)**	**5.NI.NCO.01** Model how information is broken down into packets, transmitted through multiple computing devices over networks and the internet and reassembled at the destination. **Standard not currently supported**
	Cybersecurity	**3.NI.C.01** Identify problems that relate to inappropriate use of computing devices and networks. **Standard not currently supported**	**4.NI.C.01** Discuss real-world cybersecurity problems and identify strategies for how personal information can be protected. **Input/Output: Computer Systems (4)**	**5.NI.C.01** Analyze the credibility of digital information (e.g., comparing multiple accounts and sources, the author's point of view). **Standard not currently supported**
				5.NI.C.02 Discuss cybersecurity problems caused by information that is published for different reasons (e.g., inform, advertise, persuade, harm). **Standard not currently supported**
Data & Analytics	Storage	**3.DA.S.01** Recognize that different types of information are stored in different formats that have associated programs (e.g., documents open in a word processor) and varied storage requirements. **Standard not currently supported**	**4.DA.S.01** Choose different storage locations (e.g., physical, shared, cloud) based on the type of file, storage requirements (e.g., file size, availability, available memory) and sharing requirements. **Standard not currently supported**	**5.DA.S.01** Evaluate trade-offs, including availability and quality, based on the type of file, storage requirements (e.g., file size, availability, available memory) and sharing requirements. **Standard not currently supported**
	Collection, Visualization & Transformation	**3.DA.CVT.01** Collect data using various programs and formats (e.g., surveys, forms) and organize the data in various visual formats (e.g., charts, graphs, tables). **Standard not currently supported**	**4.DA.CVT.01** Organize and present collected data visually to highlight comparisons. **Input/Output: Computer Systems (4)**	**5.DA.CVT.01** Organize and present collected data to highlight comparisons and support a claim. **Infection: Modeling and Simulation (5)**
	Inference & Models	**3.DA.IM.01** With guidance, utilize data to make predictions and discuss whether there is adequate data to be useful and to make reliable predictions. **Standard not currently supported**	**4.DA.IM.01** Determine how the accuracy of conclusions are influenced by the amount of useful and reliable data collected. **Standard not currently supported**	**5.DA.IM.01** Use reliable data to highlight or propose cause and effect relationships, predict outcomes or communicate an idea. **Infection: Modeling and Simulation (5)**

Grades 3-5 Computer Science Performance Standards

	Subconcept	3rd Grade	4th Grade	5th Grade
Algorithms & Programming	Algorithms	**3.AP.A.01** Compare multiple algorithms (sets of step-by-step instructions) for accomplishing the same task verbally and kinesthetically, with robot devices or a programming language. **Programming Patterns (3)**	**4.AP.A.01** Compare and simplify multiple algorithms (sets of step-by-step instructions) for accomplishing the same task verbally and kinesthetically, with robot devices or a programming language. **Input/Output: Computer Systems (4)**	**5.AP.A.01** Compare and simplify multiple algorithms (sets of step-by-step instructions) for accomplishing the same task verbally and kinesthetically, with robot devices or a programming language, then determine which is the most efficient. **Infection Modeling and Simulation (5), Robotics and Automation: Challenge (5)**
	Variables	**3.AP.V.01** Create programs that use variables to store and modify grade level appropriate data. **Standard not currently supported**	**4.AP.V.01** Create programs that use variable to store and modify grade level appropriate data. **Input/Output: Computer Systems (4)**	**5.AP.V.01** Create programs that use variables to store and modify grade level appropriate data. **Infection: Modeling and Simulation (5)**
	Control	**3.AP.C.01** Collaboratively create a program using control structures (e.g., sequence, conditionals, interactive- looping) to make decisions within a program. **Programming Patterns (3)**	**4.AP.C.01** Create a program using control structures (e.g., sequence, conditionals, interactive-looping) to solve a problem or express ideas both independently and collaboratively. **Input/Output: Computer Systems (4)**	**5.AP.C.01** Create a program using control structures (e.g., sequence, conditionals, interactive-looping), event handlers and variables to solve a problem or express idea both independently and collaboratively. **Infection Modeling and Simulation (5), Robotics and Automation: Challenge (5)**
	Modularity	**3.AP.M.01** Decompose (break down) the steps needed to solve a problem into precise sequence of instructions. **Programming Patterns (3)**	**4.AP.M.01** Decompose (break down) large problems into smaller, manageable sub problems to facilitate the program development process. **Input/Output: Computer Systems (4)**	**5.AP.M.01** Decompose (break down) large problems into smaller, manageable sub problems and then into a precise sequence of instructions. **Infection: Modeling and Simulation (5), Robotics and Automation: Challenge (5)**
		3.AP.M.02 With grade appropriate complexity, modify, remix or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features. **Programming Patterns (3)**	**4.AP.M.02** With grade appropriate complexity, modify, remix or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features. **Input/Output: Computer Systems (4)**	**5.AP.M.02** With grade appropriate complexity, modify, remix or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features. **Infection: Modeling and Simulation (5)**
	Program Development	**3.AP.PD.01** Use an iterative and collaborative process to plan the development of a program while solving simple problems. **Programming Patterns (3)**	**4.AP.PD.01** Use an iterative and collaborative process to plan the development of a program that includes user preferences while solving simple problems. **Input/Output: Computer Systems (4)**	**5.AP.PD.01** Use an iterative and collaborative process to plan the development of a program that includes other perspectives and user preferences while solving simple problems. **Infection: Modeling and Simulation (5), Robotics and Automation: Challenge (5)**
		3.AP.PD.02 Observe intellectual property rights and give appropriate credit when creating or remixing programs. **Standard not currently supported**	4.AP.PD.02 Observe intellectual property rights and give appropriate credit when creating or remixing programs. **Standard not currently supported**	**5.AP.PD.02** Observe intellectual property rights and give appropriate credit when creating or remixing programs. **Standard not currently supported**
		3.AP.PD.03 Analyze and debug a program that includes sequencing, repetition and variables in a programming language. **Programming Patterns (3)**	4.AP.PD.03 Analyze, create and debug a program that includes sequencing, repetition, conditionals and variables in a programming language. **Input/Output: Computer Systems (4)**	**5.AP.PD.03** Analyze, examine, create and debug a program that includes sequencing, repetition, conditionals and variables in a programming language. **Infection: Modeling and Simulation (5), Robotics & Automation (5)**
		3.AP.PD.04 Communicate and explain your program development using comments, presentations and interactive demonstrations. **Standard not currently supported**	**4.AP.PD.04** Communicate and explain your program development using comments, presentations and interactive demonstrations. **Standard not currently supported**	**5.AP.PD.04** Communicate and explain your program development using comments, presentations and interactive demonstrations. **Infection: Modeling and Simulation (5), Robotics & Automation (5)**

	Subconcept	3rd Grade	4th Grade	5th Grade
Impacts of Computing	Culture	**3.IC.C.01** Identify computing technologies that have changed the world and express how those technologies influence, and are influenced by, cultural practices. **Standard not currently supported**	**4.IC.C.01** Give examples of computing technologies that have changed the world and express how those technologies influence, and are influenced by, cultural practices. **Standard not currently supported**	**5.IC.C.01** Give examples and explain how computing technologies have changed the world and express how computing technologies influence, and are influenced by, cultural practices. **Robotics and Automation (5), Robotics and Automation: Challenge (5)**
		3.IC.C.02 Identify possible problems and how computing devices have built in features for increasing accessibility to all users. **Programming Patterns (3)**	**4.IC.C.02** Brainstorm problems and ways to improve computing devices to increase accessibility to all users. **Input/Output: Computer Systems (4)**	**5.IC.C.02** Develop, test and refine digital artifacts to improve accessibility and usability. **Standard not currently supported**
	Social Interactions	**3.IC.SI.01** Develop a code of conduct, explain and practice grade-level appropriate behavior and responsibilities while participating in an online community (e.g., responsibilities of being a good digital citizen, private and personal information, showing respect for other people's work). Identify and report inappropriate behavior and know how to report cyberbullying. **Programming Patterns (3)**	**4.IC.SI.01** Develop a code of conduct, explain and practice grade-level appropriate behavior and responsibilities while participating in an online community (e.g., using strong passwords, creating a positive online community, recognizing spam and what to do about it, citing online sources). Identify and report inappropriate behavior and know how to report cyberbullying. **Input/Output: Computer Science (4)**	**5.IC.SI.01** Develop a code of conduct, explain and practice grade-level appropriate behavior and responsibilities while participating in an online community (e.g., talking safely online, promoting good digital citizens, privacy settings, cyberbullying). Identify and report inappropriate behavior and know how to report cyberbullying. **Infection: Modeling and Simulation (5)**
	Safety, Law & Ethics	**3.IC.SLE.01** Identify types of digital data that may have intellectual property rights that prevent copying or require attribution. **Standard not currently supported**	**4.IC.SLE.01** Discuss the social impact of violating intellectual property rights. **Standard not currently supported**	**5.IC.SLE.01** Observe intellectual property rights and give appropriate credit when using resources. **Standard not currently supported**
		3.IC.SLE.02 Discuss the importance of a positive digital footprint. **Programming Patterns (3)**	**4.IC.SLE.02** Discuss and understand the implications of a negative digital footprint. **Input/Output: Computer Science (4)**	**5. IC.SLE.02** Continue to discuss and understand the implications of positive and negative digital footprints and that they never go away. **Infection: Modeling and Simulation (5)**