PLTW Launch Standards Guide

TN Computer Science State Standards (K-5)

Each PLTW Launch Module integrates Science, Engineering, Computer Science, ELA, and Math and connects to many bodies of standards. This standards guide is focused on Computer Science, and provides standards connections to the TN Computer Science State Standards.

PLTW Launch Modules have been thoughtfully connected to TN standards for Tennessee educators. Each grade level has been assiged the PLTW Launch Modules that are the "best-fit" for the Tennessee Academic Standards for Science; for consistency, the same modules are used in this guide. When grade level suggestions vary from the intended grade level it is shown like this: *Variation of Traits (3)* to indicate that the module was originally developed for use in 3rd Grade.

Tennessee educators also have the flexibility to utilize the PLTW Launch Modules in the grade level that works best for their students.

Please note: The information included in this document is subject to change. As with all course materials, we will continue to update as more information becomes available









| ELTW LAUNCH Kindergarten Computer Science | | Structure and Function: Exploring Design | Matter: Floating and Slnking (PK) | Life Science: Living and Nonliving Things (PK) | Sunlight and Weather | Living Things: Needs and Impacts | Pushes and Pulls | Structure and Function: Human Body | Animals and Algorithms |
|---|--|---|--------------------------------------|---|----------------------|-------------------------------------|------------------|---------------------------------------|------------------------|
| K.FC Foundational Concepts | 1) Locate letters and numbers on the keyboard. | | | | | | | | |
| | 2) Ask questions to conduct investigations, solve problems, and test solutions. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| K.AT: Algorithmic Thinking | 1) Construct sequential events step-by-step in a logical order. | | | | | | | | \checkmark |
| K.DA: Data Analysis | 1) Collect and organize data. | | | | \checkmark | | | | |
| K.NI: Networking and the Internet | 1) Demonstrate age-appropriate methods for keeping personal information private. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |







| Ist Grade Computer Science | | Light and Sound | Designs Inspired by Nature | Light: Observing the Sun, Moon, and Stars | Animated Storytelling |
|--------------------------------------|--|-----------------|----------------------------|--|-----------------------|
| 1.FC Foundational | 1) Navigate to applications and documents by using desktop icons, windows, and menus (e.g., open and close the browser window, find/use bookmark to store the website, recognize and use app on tablet). | | | | |
| Concepts | 2) Demonstrate use of input devices (e.g., mouse, keyboard). | | | | |
| 1.AT: Algorithmic Thinking | 1) Identify and revise problem-solving strategies to solve a simple problem. | \checkmark | \checkmark | \checkmark | \checkmark |
| | 2) Classify and sort information into logical order with and/or without a computer. | \checkmark | \checkmark | \checkmark | \checkmark |
| | 3) Utilize digital tools to illustrate potential solutions to a problem. | \checkmark | \checkmark | \checkmark | \checkmark |
| 1 DA: Data Analysis | 1) Interpret data displayed in a chart. | | | | \checkmark |
| I.DA: Data Analysis | 2) Organize data using similarities and differences. | | | \checkmark | |
| 1.NI: Networking and the Internet | 1) Advocate, demonstrate, and routinely practice safe, legal, and responsible use of information and technology. | \checkmark | \checkmark | \checkmark | \checkmark |







| PLTW LAUNCH 2nd Grade Computer Science | | Animal Adaptations (3) | Living Things: Diversity of Life | Variation of Traits (3) | The Changing Earth | Materials Science: Form and Function | Grids and Games |
|--|--|------------------------|-------------------------------------|-------------------------|--------------------|---|-----------------|
| | 1) Use the menu and tool bar to navigate editing functions. | | | | | | |
| 2.FC Foundational | 2) Use a variety of digital tools collaboratively to connect with other learners | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| Concepts | 3) Ask questions to conduct investigations, solve problems, and test solutions. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| | 4) Select technology or tools to solve a problem or design a solution. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| | 1) Plan and create a design document to illustrate thoughts, ideas, and stories in a sequential (step-by-step) manner (e.g., story map, storyboard, sequential graphic organizer). | | | | | | \checkmark |
| 2.AT: Algorithmic Thinking | 2) Compare and evaluate multiple ways to get a solution. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| | 3) Categorize a group of items based on the attributes of actions of each item, with or without a computing device. | | | | | | |
| | 1) Use data to make decisions, identify solutions, or determine relationships. | | \checkmark | | \checkmark | | |
| 2.DA: Data Analysis | 2) Use if/then reasoning to understand relationships with data | | | | | | |
| | 3) Collect, create, and organize data in a digital chart or graph. | | \checkmark | | \checkmark | | |
| 2.NI: Networking and the Internet | 1) Identify appropriate and inappropriate behaviors for communicating in a digital environment. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| | 2) Cite media and/or owners of digital content. | | | | | | |
| | 3) Create a research-based product using online digital tools. | | \checkmark | | | | |
| 2.IC: Impacts of Comuting | 1) Recognize and describe the potential risks and dangers associated with various forms of online communications (e.g., cell phones, social media, digital photos). | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |







| PLTW LAUNCH 3rd Grade Computer Science | | Materials Science: Properties of Matter (2) | Stability and Motion: Forces and Interactions | Environmental Changes | Life Cycles and Survival | Weather: Factors and Hazards | Stability and Motion: Science of Flight | Programming Patterns |
|--|--|--|--|-----------------------|--------------------------|---------------------------------|--|----------------------|
| | 1) Locate and use appropriate online tools and resources to explore, research, and collect data on specific topics (e.g., applications, web browsers, and online tutorials). | | | | | | | |
| 3.FC: Foundational Concepts | 2) Communicate key ideas and details collaboratively in a way that informs, persuades, and/or entertains, using digital tools. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| | 3) Use basic features of digital tools to communicate key ideas and details in a way that informs and/or persuades. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| 3.AT: Algorithmic Thinking | 1) Discuss the design process and use digital tools to illustrate potential solutions. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| | 2) Create an algorithm to solve a problem as a collaborative team. | | | | | | | \checkmark |
| | 3) Identify problems to solve and generate questions for investigations. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| | 1) Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea. | | | \checkmark | \checkmark | \checkmark | \checkmark | |
| 3.DA: Data Analysis | 2) Describe examples of data sets or databases from everyday life. | | | | | \checkmark | | |
| 3.NI: Networking and the | 1) Advocate, demonstrate, and routinely practice safe, legal, and responsible use of information and technology | | | | | | | |
| Internet | 2) Conduct basic keyword searches to produce valid, appropriate results, and evaluate results for accuracy, relevance, and appropriateness | | | | | | | |
| 3.PC: Programming Concepts | 1) Analyze a given list of sub-problems while addressing a larger problem. | | | | | | | \checkmark |
| | 2) Define a problem or task, decompose it into smaller sub-problems. | | | | | | | \checkmark |
| | 3) Use numbers or letters to represent information in another form. | | | | | | | |







| Ath Grade Computer Science | | Energy Exploration | Waves and the Properties of Light | Ecosystems: Flow of Matter and Energy (5) | Organisms: Structure and Function | Earth: Past, Present, and Future | Earth: Human Impact and Natural Disasters | Input/Output: Human Brain | Input/Output: Computer Systems |
|-----------------------------------|---|--------------------|--------------------------------------|--|--------------------------------------|-------------------------------------|--|------------------------------|-----------------------------------|
| | 1) Demonstrate an appropriate level of proficiency in performing tasks using a range of digital devices. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| 4.FC: Foundational Concepts | 2) Use age-appropriate online tools and resources (e.g., learning management systems, grade and assignment record, tutorial, assessment, web browser). | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| | 3) Create a simple digital model of a system and explain what the model shows and does not show. | | | | | | | | \checkmark |
| 4.AT: Algorithmic Thinking | 1) Examine logical reasoning to predict outcomes of an algorithm | | | | | | | | \checkmark |
| | 2) Use flowcharts to create a plan or algorithm. | | | | | | | | \checkmark |
| | 3) Construct a basic system of numbers, letters, or symbols to represent information as a cipher. | | | | | | | | |
| 1 DA: Data Analysis | 1) Collect, organize, analyze, and interpret data to identify solutions and/or make informed decisions. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| | 2) Gather data to answer a question using a variety of computing and data visualization methods. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| 4.NI Networking and the | 1) Identify appropriate and inappropriate uses of communication technology and discuss the permanence of actions in the digital world. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| Internet | 2) Conduct advanced keyword searches to produce valid, appropriate results and evaluate results for accuracy, relevance, and appropriateness. | | | | | | | | |
| 4.PC: Programming Concepts | 1) Test and debug a given program in a block-based visual programming environment using arithmetic operators, conditionals, and repetition in programs, in collaboration with others. | | | | | | | | \checkmark |
| 4.IC: Impacts of Computing | 1) Identify laws and tools which help ensure that users of varying abilities can access electronic and information technology | | | | | | | | |
| | 2) Explain how hardware and applications can enable everyone, including people with disabilities, to do things they could not do otherwise. | | | | | | | | |







| DETW LAUNCH 5th Grade Computer Science | | Matter: Properties and Reactions | Earth's Water and Interconnected Systems | Patterns in the Universe | Robotics and Automation | Robotics and Automation: Challenge | Infection: Detection | Infection: Modeling and Simulation |
|--|--|-------------------------------------|---|-----------------------------|----------------------------|---------------------------------------|----------------------|---------------------------------------|
| 5.FC: Foundational Concepts | 1) Use advanced features of digital tools and media-rich resources to communicate key ideas and details in a way that informs, persuades, and/or entertains. | | | | | | | \checkmark |
| 5.AT: Algorithmic Thinking | 1) Analyze and improve an algorithm that includes sequencing and simple patterns with or without a computing device. | | | | | \checkmark | | \checkmark |
| | 2) Create an algorithm to solve a problem while detecting and debugging logical errors within the algorithm | | | | | \checkmark | | \checkmark |
| | 3) Develop and recommend solutions to a given problem and explain the process to an audience. | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark | \checkmark |
| | 1) Manipulate data to answer a question using a variety of computing methods and tools to collect, organize, graph, analyze, and publish the resulting information | | \checkmark | \checkmark | | | \checkmark | \checkmark |
| 5.DA: Data Analysis | 2) Connect data from a simulation to real-life events. | | | | | | | \checkmark |
| 5.NI Networking and the | 1) Explain responsible uses of technology and digital information; describe possible consequences of inappropriate use such as copyright infringement and piracy. | | | | | | | \checkmark |
| Internet | 2) Apply copyright principles to real life scenarios. | | | | | | | \checkmark |
| 5.PC: Programming Concepts | 1) Create simple animated stories or solve pre-existing problems using a precise sequence of instructions and simple loops, collaboratively or individually | | | | | \checkmark | | \checkmark |
| | 2) Identify bugs (errors) in basic programming. | | | | | \checkmark | | \checkmark |
| 5.IC: Impacts of Computing | 1) Analyze the impact of social media on individuals, families, and society. | | | | | | | |



