



LEAP* into the Loop!

*Lyla Educational Activities and Programs

About LYLA IN THE LOOP

[LYLA IN THE LOOP](#) is an animated series for kids ages 4-8 that stars Lyla, a dynamic 7-year-old Black girl, and her close-knit family, including her mom, dad, 5-year-old brother Luke, 12-year-old twin sisters Liana and Louisa, and best friend Everett Phan. Lyla's family owns a diner in a neighborhood bustling with activity. In every adventure, Lyla and Stu—her fantastical blue sidekick—introduce and explore foundational computational thinking concepts, leading to some comedic disasters and creative solutions, all while helping others in their community.

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What is Computational Thinking (CT)?

The PBS KIDS CT Learning Framework defines CT as “a way of thinking to solve problems, express oneself, and accomplish tasks using practices, processes and skills at the core of computer science fields.” Although CT has its origins in computer science, the foundational CT concepts and practices are valuable in everyday life and support kids' creative problem-solving and critical thinking skills. The table below provides a definition and everyday example of key CT concepts.

CT Concept	Everyday Example
Algorithms: Step by step processes where the order and specificity of the steps matter to the outcome	Steps for tying your shoelaces
Representation: Ideas and messages can be represented by symbols	Sending a thumbs-up emoji to express that you like the last text message
Abstraction: Looking at a set of things and identifying important elements, patterns, and shared attributes between those things (color, shape, size, etc.)	Sorting socks by color



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The Design Process: An iterative set of practices used to develop a product or process to address a need or a problem	Creating a new recipe, testing it out, and improving it until the food tastes just how you like it
Control Structures: The rules that determine which step in an algorithm is to be completed next	Connecting a cause to an effect (e.g., IF it's raining outside, THEN bring an umbrella, or ELSE don't bring an umbrella OR IF you have a hooded coat, THEN wear it)
Debugging: Figuring out why a device or program is not working right	Changing the batteries when the TV remote doesn't work anymore
Modularity and Decomposition: Things that seem complex are really just made up of smaller parts that can be changed, rearranged, and reused in new ways	Recombining building blocks from a toy house to make a boat
Human and Computer Systems: There's a difference between humans and computing systems and what they can do.	Asking a smart device to set a timer for a cake in the oven vs. checking the cake yourself to see if it's ready to take out

What are CT Mindsets?

When kids engage in CT, there are patterns of behaviors and ways of thinking that they use to be successful in solving a problem or accomplishing a task. These behaviors, or **mindsets**, include:

- Thinking logically and strategically
- Demonstrating flexibility and creativity
- Showing confidence, persistence and perseverance in approaching challenges
- Collaborating with others to meet a common goal
- Considering multiple perspectives and approaches
- Communicating to express oneself, share ideas, and listen to others

CT mindsets are derived from a combination of key Executive Functioning (EF) and Social & Emotional Learning (SEL) skills.

- **EF skills** include: focused attention, working memory, flexible thinking, impulse control, and task persistence
- **SEL skills** include: self-awareness, self-management, social awareness, and relationship skills

PROCESSES, CORE CONCEPTS AND SKILLS

EVERYDAY ACTIVITIES



DESIGN PROCESS

DESIGNING A HOUSE FROM BLOCKS



DEBUGGING

FIXING MISMATCHED SOCKS



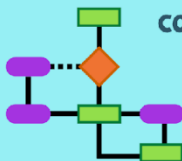
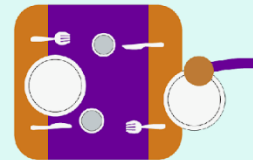
ALGORITHMS

BRUSHING TEETH



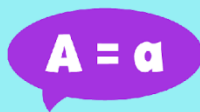
DECOMPOSITION & MODULARITY

SETTING THE TABLE



CONTROL STRUCTURES

STOP LIGHT GUIDING TRAFFIC



REPRESENTATION & ABSTRACTION

LETTERS REPRESENT SOUNDS



HARDWARE & SOFTWARE

INSTRUMENT & MUSIC



Adapted from original design courtesy of Emily Relkin and Marina Bers, Tufts University, 2021.