

Standard: AP.PD.01 Grade Band: K-2

Grade	Standard
K	With guidance, create a grade level appropriate document to illustrate thoughts, ideas, or stories in a sequential manner (e.g., storyboard, story map, sequential graphic organizer).
1	Create a grade-level appropriate document to illustrate thoughts, ideas, or stories in a sequential manner (e.g., storyboard, story map, sequential graphic organizer).
2	With guidance, create a grade level appropriate document to clarify the steps that will be needed to create a sequential program and can be used to check if the program functionality is correct.

Grade	Essential Skills
K	Identify, in order, the steps to describe a process, tell a story, etc. Present ordered steps in a document with teacher assistance, as necessary.
1	Present ordered steps to describe a process, to tell a story, etc. in a document.
2	Describe the ordered steps needed to create a computer program in a document. Explain the desired goals of a program in a document.

Explanation
Students will create a planning document to clarify the sequence of events that occur in the story or the steps that are needed to describe a process or create a program . The importance of sequence to the achievement of the expected outcome is an essential element of planning and students should be aware of the consequences to the expected outcome if the events occur in a different sequence. The planning document may be a storyboard, a graphic organizer, short video, or any appropriate artifact and should contain the end of the story or the expected result. Students at this stage may complete the planning process with help from their teachers. By second grade, the planning document should be used to order the steps of a computer program .

Think of this as similar to....
A recipe is a set of instructions in a certain order that helps you achieve your goal (a cake!) Recipes help you know what to do and when to do them--like put the ingredients in the bowl before you stir.

Essential Questions
Why does the order of steps matter in a computer program , a process or a story?
How can you describe a computer program, a process, or a sequence of events in a story?
How can you describe a computer program, a process, or a sequence of events in a story?

Implementation Examples—What would this look like in the classroom?

Grade(s)	Title	Description	Link	Content Connection & Notes
K	Little Red Hen	Grade K --Students listen to and/or watch a video of The Little Red Hen. Students then put the sequencing picture cards in the correct order to retell the story.	Little Red Hen	This lesson aligns with CS AP.A.01 and can be adapted for a different story.
K	Introduction to Code & Go Robots	Grade K --Students are introduced to programming a Code and Go robot to perform basic commands (move forward, backward, rotate left, rotate right). Tell the class you want the robot to go forward, turn around, and come back. Provide large arrows (that match the arrows on the robot) for the class to use to ""write a program"" for the robot, identifying what the first step is, second step, etc. Using the ""program"" as a guide, students program the robot. Together create a basic story, for example the mouse (the robot) needs to find the cheese. Then, students divide into groups to write a program for their floor robot to complete a maze and solve the problem in the story. (see example in link). Before they program the robot, students should write and document their program by sticking arrows on a paper. They can then try the program they documented to determine if it will get the mouse through the maze. Encourage students to use proper terminology with each other to discuss the robot's movements. "I used the rotate right arrow to make a right turn." and to take turns making the robot move.	Code and Go Introduction	This lesson aligns with ELA SL.K.1A, 1B
K-2	Dancing Alone	Grade K --Students use Scratch Jr. to create a silly dance for Scratch Cat using motion blocks. Students are introduced to creating sequences of code in Scratch Jr. Students use print outs of Scratch Jr. code blocks to plan their programs. Grade 1 --Using the printouts of the programming blocks, students should identify how the order of the motion blocks determines the order of the dance and explain what they wanted the cat to do. Students should predict how changing the order of the blocks will change the dance, explain why the reasons for the changes and the reasons they make the changes in the code that they do and test their predictions. Grade 2 --Students should use the printouts to create an algorithm and explain what they intend their program to do. They then program their algorithm and compare the outcome with their plan.	Dancing Alone and printouts of coding blocks	This lesson aligns with CS AP.A.01 and is similar to Getting Loopy .

Grade(s)	Title	Description	Link	Content Connection & Notes
1	Bug Dance	Grade 1 --After reading the book Bug Dance, students will program their Bee Bot to perform the dance they learned in the book. Then, students will use the yellow command cards to program their own original sequential dance. The dance should have a clear beginning, middle and end to show that students understand how to create a program with sequential steps.	Bug Dance	This lesson aligns with ELA W.1.3 and uses Bee Bots or other floor robots, command cards and the book <i>Bug Dance</i>
1-2	Ruby's Algorithms	Grade 1 --Students are given directions to complete tasks, beginning with familiar tasks. Then, using the algorithm activity map, students create algorithms for Ruby to visit her four friends. Students use directional arrows to show the path she would follow. Grade 2 --Students create algorithms to complete familiar tasks and then create algorithms for Ruby to visit her friends using the algorithm activity map. Student's document which algorithm should be used to visit which friend and other students check if the algorithms function as intended. "	Ruby's Algorithms	This lesson aligns with CS AP.A.01 and uses the book <i>Hello Ruby: Adventures in Coding</i> .
2	Crazy Character Algorithms	Grade 2 --Students will create algorithms (steps needed) for drawing crazy characters. Then, they will test and refine these algorithms by challenging teammates to follow their instructions and compare. By testing the work of their peers, student will show that they understand how to check the functionality of a program.	Crazy Character Algorithms	

Standard: AP.PD.01 Grade Band: K-2

These annotations are a collaboration between [Maryland Center for Computing Education](#) and the [Maryland State Department of Education](#).