1.AP.2 Algorithms and Programming

> The student will plan and implement algorithms that include the use of sequence and an event based on a predetermined task. (a) Plan and create a design document that illustrates thoughts, ideas, and stories in a sequential manner. (b) Construct step-by-step instructions that include decision-making and repetition. (c) Identify and explain the role of events that are used in an algorithm. (d) Test algorithms that are sequential and contain an event.

Understanding the Standard

As students listen to stories, they realize stories have a beginning, middle, and end. Planning a story is similar to writing an algorithm or program in that there are steps that are followed as the author determines the beginning, middle and end of the story. Authors use multiple ways of planning and telling a story. Stories can be told using story maps, storyboards, or graphic organizers. In first grade, students should be introduced to the idea that programs and algorithms need a defined way to start the sequence of steps, called an event. When creating algorithms and programs, they should begin each algorithm with a single event. This will set the stage for their second-grade work, which involves writing programs that use more than one event.

Term	Definition
Event	Something that causes a portion of a program to run (e.g., a mouse click)
Graphic organizer	A visual learning tool to help organize ideas
Storyboard	A sequence of drawings that represent the plot of a story
Story map	Graphic organizer that helps students think through the parts of their story

Prerequisite Knowledge

Students should be familiar with the concept that a story has a beginning, middle, and end, as well as have previous experience arranging events in sequential order.

Integration Opportunities

English 1.W.2 With support, have students create a story map following a pattern of story structure to generate ideas and plan an original story in sequential order. Students can use text or pictures to indicate the first, next, and last events.

History 1.6d Students will construct maps and give directions for others to get to a location on the map.

Math 1.MG.2a-b,d Create an algorithm to draw a shape using steps that include size changes, then test the steps and discuss how the shapes compare.

Physical Education 1.1 Play a teacher-led variation of “Simon Says” to practice coordinated movements where the phrase “Simon Says” is the event which begins each movement.

Visual Arts 1.2b Students can create and follow algorithms to create a piece of artwork. They can compare and contrast the process for making art to creating a program.

Summary of a Lesson

As a class, read a story such as "The Snowy Day" by Ezra Jack Keats (*or any story that has easily discernible scenes*) to the class, pausing at key scenes in the story. At each pause, add that part of the story to a class storyboard or story map that reflects the key scenes in the story. Use the storyboard to retell the story after reading. Next, have students work individually or in pairs to create their own storyboards or story maps (digital or paper version) based on a story they have read or a story they would like to share. Limit the number of panels to a maximum of four, to ensure students focus on the most significant scenes. Then, have students transfer their storyboard or story map into Scratch Jr. Lastly, have students conduct a gallery tour of their classmates' storyboards or story maps.