

# Standard: AP.PD.01    Grade Band: 3-5

Grade	Standard AP.PD.01
3	Use an <b>iterative process</b> to plan the development of a <b>program</b> by including others' perspectives and considering user preferences while solving simple problems.
4	Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences while solving simple problems.
5	Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences while solving problems.

Grade	Essential Skills
3	Review and revise the plan for a <b>computer program</b> by incorporating feedback from a partner.
4	Review and revise the plan for a computer program repeatedly by incorporating feedback from peers.
5	Review and revise the plan for a computer program by repeatedly incorporating the perspective of users and others.

Explanation
Students will create a plan to develop a <b>computer program</b> and recognize that planning is an essential part of program development. Since a plan is rarely accomplished all at once, but improved when revisited and revised, students will <b>iterate</b> on their plan as they consider time and resource constraints as well as the perspectives, needs and preferences of others. Documentation of the plan can be in one of many forms such as a storyboard, flowchart, <b>pseudocode</b> , or story map.

Think of this as similar to....
The first time you use a recipe it may not turn out exactly how you wanted. You can decide what to change and ask others who ate it for their recommendations of how it could be improved. You can incorporate the changes and try it again and repeat the process until it turns out exactly the way you want it.

Essential Questions
What is an <b>iterative process</b> ?
Why is it helpful to <b>iterate</b> (repeatedly review and revise) during development of a computer program?
Why is it necessary to gather feedback and then update/improve a plan?

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

Grade(s)	Title	Description	Link	Content Connection & Notes
3	<b>Introduce: Synchronization</b>	<b>Grade 3</b> --Students will work in a small group to create a plan to coordinate actions of different sprites (characters) in a computer program. Students will have others in their group test their code and they will revise the plan (and the associated code) repeatedly until the actions of the sprites are timed as desired.	<a href="#">Introduce: Synchronization</a>	This lesson also aligns to CS standard AP.M.02
3-5	<b>Build My City</b>	<p><b>Grade 3</b>--Students will review key programming concepts in the Build My City project. A demo project is used to explain the design requirements and expectations. Students meet in their project groups and use storyboarding to develop their ideas for their city. Within their groups, students should explain their ideas and collaboratively plan the code that they will use to carry it out. As they develop the code, they should consider the perspective of the people who view the project (for example other students, teachers, parents)</p> <p><b>Grade 4</b>--Students review and provide feedback for the storyboards of other groups and incorporate the feedback they receive from other groups into their program.</p> <p><b>Grade 5</b>--Students solicit feedback from adults in their lives (other staff, parents, etc.) and incorporate the feedback they receive into their programs. Students should reflect on how that feedback provides a different perspective than that of their peers.</p>	<a href="#">Build My City</a>	This lesson also aligns to CS standards AP.M.02 and AP.PD.04. The same idea can be used with an <a href="#">About Me</a> or <a href="#">Superhero</a> project.
3-5	<b>Chase Game</b>	<p><b>Grade 3</b>--Students are guided through the tutorial called, "Make a Chase Game." Students should plan their project initially and work in groups to revise their plans as they create the program.</p> <p><b>Grade 4</b>--Students share their projects with peers and revise their program based on feedback received.</p> <p><b>Grade 5</b>--Students design their program for younger students (1st/2nd graders). When the younger students play the game, the designers make observations about what engages the younger students, what is challenging and ask the younger students for suggestions about how to improve the game. Fifth grade students analyze the feedback, determine what changes to make and how to go about programming the changes. They can then again give it to the younger students and determine if and how the game has improved.</p>	Make a Chase Game <a href="#">Educator Guide</a> and <a href="#">Presentation</a>	ELA SL.5.1

Grade(s)	Title	Description	Link	Content Connection & Notes
4-5	<b>Introducing Variables</b>	<p><b>Grade 4</b>--Students will work in a small group to plan how to include variables to keep score in a computer game. Students will work solicit feedback about the plan from classmates and determine how the feedback can be incorporated into their plan. Once the plan is revised, students solicit additional feedback revisiting the plan until they believe the program will function effectively.</p> <p><b>Grade 5</b>--Students should solicit feedback for their plans from users other than their classmates. Students will then incorporate feedback into their plans and solicit additional feedback revisiting the plan until they believe the program will function most effectively for a particular user group.</p>	<a href="#">Introducing Variables</a>	

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