TechSmart

Difficulty Level 5

Allows students to discover their own solutions to coding challenges without guidance.

For students who are confident in solving coding problems of all sizes without guidance. It would be detrimental to provide them with any additional guiding questions, as it would take away their opportunity to learn how to code through their own determination and creativity. They are capable of meeting the learning targets without any additional support. Students at this Difficulty Level:

- Benefit from having opportunities to learn coding through the process of discovery and imagination.
- Tend to be self-propelled learners that are comfortable acquiring knowledge through trial and error without a safety net.
- May have coded previously or have a strong interest in coding.
- Are comfortable using and repeating coding terminology and syntax.
- May struggle at times to have confidence or recognize how much their coding ability has grown over time.
- Are unlikely to have an Individualized Education Plans (IEP) that requires classroom modifications or accommodations.

These students are potential role models for their peers, and could progress into leaders in their classroom.

Bio

Flora's dad works as a programmer and her mom works at a tech startup. At home, Flora watches both parents use the latest computing devices, and has had many technology conversations with them. She's been to her parents' offices a few times and has seen what it's like to work in tech. For her birthday, her parents got her a programmable robot and she quickly figured out how to create her own programs for it. When it comes to experimenting with unfamiliar technology, she fearlessly learns through trial and error. Difficulty Level 5 supports Flora's desire to discover and imagine solutions all on her own.

TechSmart

Difficulty Level 4

Allows students to discover their own solutions to coding challenges with the option for structural guidance.

For students who are more confident writing paragraph-level code, but struggle with identifying how to structure a larger program. They benefit from additional guiding questions allowing them to discover the structure of the solution code. Students at this Difficulty Level:

- Benefit from having guided opportunities to practice and commit to memory the composition of many interdependent coding concepts.
- Tend to be self-propelled learners that are comfortable acquiring knowledge through trial and error with a safety net.
- May have coded previously or have a strong interest in coding.
- Are mostly comfortable using and repeating coding terminology and syntax.
- May struggle at times to have confidence or recognize how much their coding ability has grown over time.
- Are unlikely to have an Individualized Education Plan (IEP) with classroom accommodations or modifications for visual processing difficulties, for Attention Deficit Hyperactivity Disorder (ADHD), etc.

To progress to Difficulty Level 5, students will need determination to learn how to structure larger programs, and this Difficulty Level encourages them to work towards this.

Bio

Felicia is a determined student who diligently takes notes in every class, striving to get the best marks she can. Since learning about what programmers do and their job opportunities via her TechSmart classes, Felicia decided to learn how to code so she's prepared for her future. She likes solving problems and is proud when her program is correct and elegant. Though she often gets top grades, she sometimes feels anxious about having the correct answer. Difficulty Level 4 supports Felicia's confidence by letting her know that she is on the right track, but without giving her answers or reducing the rigor of the task.

TechSmart

Difficulty Level 3

Allows students to discover their own solutions to coding challenges with structural guidance, and the option for abstract implementation guidance for paragraphs of code.

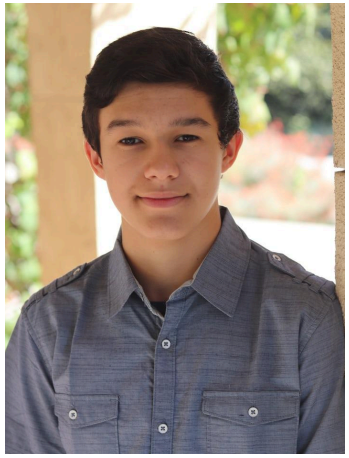
For students who struggle with identifying how to implement paragraph-level code. They benefit from additional guiding questions covering multiple lines of code and Abstract Comments about implementation. Students at this Difficulty Level:

- Benefit from having guided opportunities to practice and commit to memory the grouping of related coding concepts.
- May be self-propelled learners that are comfortable acquiring knowledge with comprehensive signposts.
- May struggle at times to focus, have confidence, or be engaged with the learning process.
- May have an Individualized Education Plan (IEP) with classroom accommodations or modifications for visual processing difficulties, for Attention Deficit Hyperactivity Disorder (ADHD), etc.
- May have learned English as a Second Language (ESL) and leans on optional guidance to understand the problem being asked to solve.

To progress to Difficulty Level 4, students will need determination to learn how to implement paragraph-level code, and this Difficulty Level encourages them to work towards this.

Bio

Theo recently moved to the U.S. from another country, where he went to an American School and learned academic English. He is a confident student and self-propelled learner, and is taking a coding class for the first time at his new school. Theo easily memorizes new definitions, terms and syntax, but struggles with grouping related coding concepts in an actual program. Difficulty Level 3 helps him group those concepts together and organize them within the entire program.



TechSmart

Difficulty Level 2

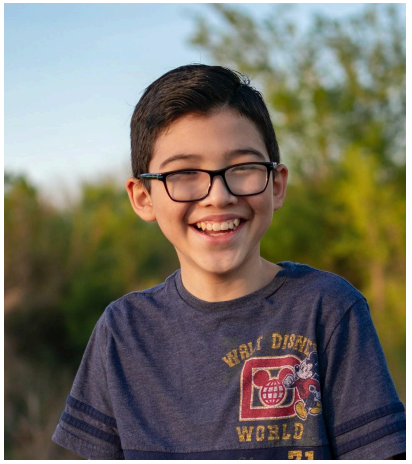
Allows students to discover their own solutions to coding challenges with structural guidance and abstract implementation guidance for lines of code, and the option for additional abstract implementation guidance for the same lines of code.
For students who struggle with identifying how to implement line-level code. They benefit from additional guiding questions covering single lines of code, Code Assist links, and substantial hinting about the shape of the solution for a line of code. Students at this Difficulty Level:

- Benefit from having guided opportunities to practice and commit to memory the most recently introduced coding concepts and syntax.
- May frequently struggle to focus, have confidence, or be engaged with the learning process.
- May have an Individualized Education Plan (IEP) with classroom accommodations or modifications for visual processing difficulties, for Attention Deficit Hyperactivity Disorder (ADHD), etc.
- May have learned English as a Second Language (ESL) and leans on optional guidance to understand the problem being asked to solve.
- Are less likely to review previous lessons or research independently.
- Are more likely to be stuck on what to do next without teacher prompting or guidance, causing them to occasionally give up.

To progress to Difficulty Level 3, students will need determination to learn how to implement line-level code, and this Difficulty Level encourages them to work towards this.

Bio

Tino is still exploring his likes and dislikes in school. Overall, he's a joyful kid who likes his friends, recess, and praise from teachers when he does something well. Tino is dyslexic, and has an IEP with accommodations for extra time. For Tino, decoding textual information takes 2–3 times longer than other students, though graphical organization of text can be helpful. He has an incredible auditory memory and can remember almost everything a teacher says about a concept verbatim. Even though he often understands the main concepts and new vocabulary from teacher-led instructions, Tino struggles with knowing what code to actually type. He also struggles with debugging larger programs when an error occurs. Difficulty Level 2 helps Tino put his ideas into the program, line by line, with extensive guidance that keeps him on the right track.



TechSmart

Difficulty Level 1

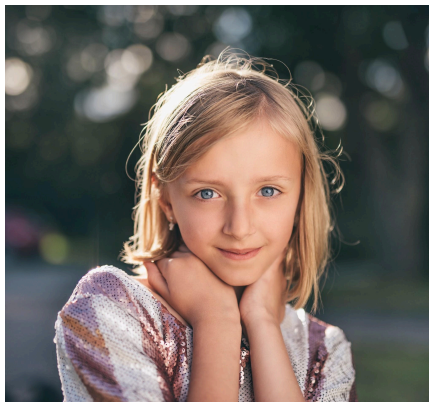
Allows students to discover their own solutions to coding challenges with structural guidance and concrete implementation guidance for lines of code, and the option for additional concrete implementation guidance for the same lines of code.

For students who struggle with fundamental literacy skills (e.g. vocabulary, spelling, syntax, etc.), motor skills (e.g. typing on a keyboard, controlling a mouse or trackpad, looking at a monitor, etc.), or who have missed prior content because they recently transferred into a class. They benefit from additional guiding questions covering single lines of code, Code Assist links, and substantial hinting about the shape of the solution for a line of code. Students at this Difficulty Level:

- Benefit from having guided opportunities to practice and commit to memory recently introduced coding concepts and syntax.
- May frequently struggle to focus, have confidence, or be engaged with the learning process.
- May have an Individualized Education Plan (IEP) with classroom accommodations or modifications for visual processing difficulties, for Attention Deficit Hyperactivity Disorder (ADHD), etc.
- May have learned English as a Second Language (ESL) and leans on optional guidance to understand the problem being asked to solve.
- Are less likely to review previous lessons or research independently.
- Are more likely to be stuck on what to do next without teacher prompting or guidance, causing them to regularly give up.

To progress to Difficulty Level 2, students will need determination to learn how to implement line-level code, and this Difficulty Level encourages them to work towards this.

Bio



Opal is a shy, kind student who has experienced foster care and multiple moves. She has only been at her current school for three months, and always feels like she is behind because she's had a different grade-level curriculum at each school. She is in 7th grade, but reads at a 4th grade level. Her main focus is on getting through each school day by being quiet and polite, and she doesn't view herself as a scholar (yet). She is learning to code for the first time with TechSmart, and is overwhelmed by all of the new vocabulary words and confusing patterns. Difficulty Level 1 helps Opal see all the steps of a Code Activity. And when she's feeling overwhelmed, she can see the correct code to type, allowing Opal to write it herself and get a feeling of success when her program works. The concrete guidance also helps her literacy skills, affording her time to read at her own pace.