

Recursion Lesson

Justification for Coding Challenge #77: Recursion Instructional Video

Recursion is an abstract concept that has real-life applications. Many definitions of recursion, including, “The process in which a function calls itself directly or indirectly is called recursion and the corresponding function is called a recursive function.”

(<https://www.geeksforgeeks.org/recursion/>) are circular definitions. They are recursive, and confusing! The theory can be difficult to grasp. In order to bring an abstract definition into concrete understanding, learners need opportunities to interact and engage with the concept and make it tangible. [Coding Challenge #77: Recursion](#) by The Coding Train is the best example of a high quality lesson. It engages learners and encourages creativity and exploration as a way to gain understanding of recursion.

The video begins with engagement and enthusiasm. The speaker is clearly excited and enthusiastic about the concept. The lesson includes a definition and example of recursion while avoiding a dry lecture-like feel. While the language and mood is approachable and fun, the lesson is not condescending. Learners are spoken to as the engaged, competent, and curious learners that they are. Before mentioning the definition of recursion, students will already be hooked with the promise of a coding challenge. They will want to watch this video.

After introducing the challenge, the video introduces a definition and some examples. The speaker suggests additional resources for further research and study, encouraging viewers to take ownership of their learning. Next, he provides a real-world coding example with easy to see visual results. By demonstrating recursion with a visual output, learners can quickly see the coding example and gain an understanding of how recursion is related to fractals, a real-world example.

Another benefit of the video is that the speaker makes mistakes! He corrects a few small errors, and is surprised by the results of a few small changes to his coding example. This allows learners to see that the process of learning includes trial and error, curiosity, and revision. Finally, the video encourages learners to put the concept of recursion into practice with their own programs. They are encouraged to explore and use their creativity to expand on the concept.

This video lesson encompasses the gt.school values of challenging kids, mastery-based learning, and using academics in real life. The explanation and challenge include a real-world example and a visual solution in code, as well as a whiteboard example. Learners are equipped with enough knowledge to grasp the concept of recursion, as well as encouragement to take

ownership of their understanding by taking a deeper dive into their own research. Learners are encouraged to apply their learning with a coding challenge.

Students will gain voice and choice, through suggested extensions to the coding challenge, including introducing randomness to a recursive function and comparing that to the real-world example of lightning. The lesson includes links in the description that support different learning styles and differentiation. Learners can choose the path, pace, and delivery of their lessons by visiting the coding train website for additional lessons. Some learners prefer to read, and they can learn more about recursion through suggested resources, including websites and books. Learners can choose their own extensions through additional linked coding challenges and extensions.

Engaging learners in abstract concepts is challenging. By encouraging creativity, experimentation, and discovery over a finished product, this video is the best example of a high-quality learning experience. It offers enough explicit teaching and real-world examples to illustrate the concept of recursion, even for beginners or struggling learners. At the same time, the enthusiastic examples and encouragement to experiment and create will engage learners at all levels. It is short enough to get students excited about the concept, and offers enough suggested resources and further challenges that learners will be inspired to choose further self-directed learning on their own.