

Teacher Guide

This lesson is designed for those students who are having difficulty demonstrating creativity while programming because they get stuck when they have to build the logic of a program. Most of the time, the solution is going on in their brains, but they are unable to convert it into a computer program since they are unable to observe the workings of the really fast and amazing brains they are blessed with. To overcome this problem, one must slow down the thinking process and observe what steps were taken by the brain and how these can be converted into a computer program.

This lesson is designed for a 10th grade student who has an introductory knowledge of basic programming concepts (variables, loops, arrays etc.) in any language (usually C or GWBASIC). This lesson will help such a student to analyze real world problems and recognize in those problems where basic programming concepts can be applied. And finally, the student would be able to build his or her own solution applicable for a programming language.

The study of programming is different from other science subjects because the students are expected to show their creativity and make their own solutions at a very beginner level. When entering this course, students often get confused about what is going on and how to deal with all the programming challenges they encounter. I've tried my best to reduce this ambiguity by relating real world examples and the brain's planning process to computer programming.

This lesson has four activities that can be performed during the breaks:

- Swapping two variables by swapping a glass of milk with a glass of crushed ice
- Finding max from an array by finding the biggest mango
- Sorting the arrays by sorting the jars
- Understanding the concept of a function, parameters and return type by comparing it with the blender/juicer.

I encourage my own students to allow speaking as much as they can about the given problem as the more they discuss, the more critically they will start thinking about it. As this thinking becomes more critical, the logic becomes clearer.

This lesson summarizes all of my findings and successful experiments done on my students in order to make them learn programming. I really hope it will be useful for you as well. I would like to thank you for your time.