Pseudocode Teacher Guide

Goal:

The goal of this exercise is to understand that while a computer has the benefit of being extremely fast compared to the speed of humans, humans are able to use certain context clues and common sense to assume information. A computer, on the other hand, only uses the information that is given to it by the programmer and nothing is ever assumed.

What is Pseudocode?

In computer science, pseudocode is a plain language description of the steps that a computer must take to complete a task. In other words, it is an informal way of describing the programming language. Programmers write pseudocode before even typing the first line of code since it allows the programmer to think about the logic of the code to ensure that it makes sense in English before attempting to translate it to a programming language.

Student Task:

Think of a simple task. Write out step by step instructions in pseudocode that a computer would use to carry out this task. Be mindful that you must include each step of the process, even the ones that seem obvious, otherwise the computer will not perform it. For example, if I want to give instructions on how to draw a square on a piece of paper I can't just simply say "draw four equal lines and make them connect." How would the computer know how long a line is? How would it know that all of a square's angles are required to be 90 degrees?

Here is an example:

1. Fold the paper once in half along the long edge.
2. Fold the paper again once along the new long edge.
3. Unfold the paper.
4. Locate the center of the paper by finding the intersection of both folds done in Step 1 and 2.
5. Place the tip of your pencil on the center point of the paper.
6. Draw a four-inch line to the right then stop but don't lift the pencil off the page.

7. Rotate the paper exactly 90 degrees to the left then repeat step 6. Once you have drawn 4 lines, you will stop.

Key Takeaways:

Did you end up with a square near the center of your paper? If so, my instructions were clear enough for you to follow. If not, then how could you improve them?

Now let's have some fun!

Follow these steps:

1. Draw a simple picture.
2. Write down instructions for creating this exact picture on the second sheet of paper. This is your pseudocode.
3. Once you're confident that you have all the steps required, find someone with which to share your pseudocode.
4. Have them walk through your steps without your help. See if they got the same picture that you drew.

Extensions

This exercise could be used to reinforce measurement, writing skills, etc. The possibilities are limitless.