



RENT-A-TECH

Computational Thinking

There is no right or wrong way to facilitate a coding workshop. In their first session, some instructors might choose to introduce their participants to a coding software as a way to let them play and explore what it can do, relying on the “learning as you go” method through their inquiry process. Other instructors may opt to start by presenting the fundamentals concept of coding with examples, or even play unplugged games that represent these concepts in a hands-on manner. We recommend doing all of the above, in the order that is most appropriate to your group. All of these steps will reinforce your participants' understanding of computational thinking.

The four aspects of computational thinking

If programming codes can be oversimplified as “telling a computer to do a specific task,” computational thinking can be defined as “the way you need to describe that task so that the computer can understand it.” Computers can only produce output for the input they receive. If the outcome isn’t what is expected, it is because what was requested — the codes written by the user — isn’t accurate.

Codes are a conversation between a user and a computer. Just like any conversation between people, miscommunications are best avoided! Before launching into a dialogue with our machine, it is best to put ideas in order — which is where computational thinking comes into play. Below are the four key concepts of computational thinking, each being as important as the other. The unplugged activities in the next section can give your students a chance to practice each of these skills.

Decomposition

Participants engage in decomposition to break down a complex problem into smaller, simpler problems that are easier to solve.

Pattern recognition

Being able to distinguish forming patterns will help participants make associations and see similarities, in problems or experience.

Abstraction

Using abstraction, participants focus on the core of the problem only — by removing any irrelevant or unrelated details.

Algorithms

Participants create a set of steps to be followed to solve a problem.

