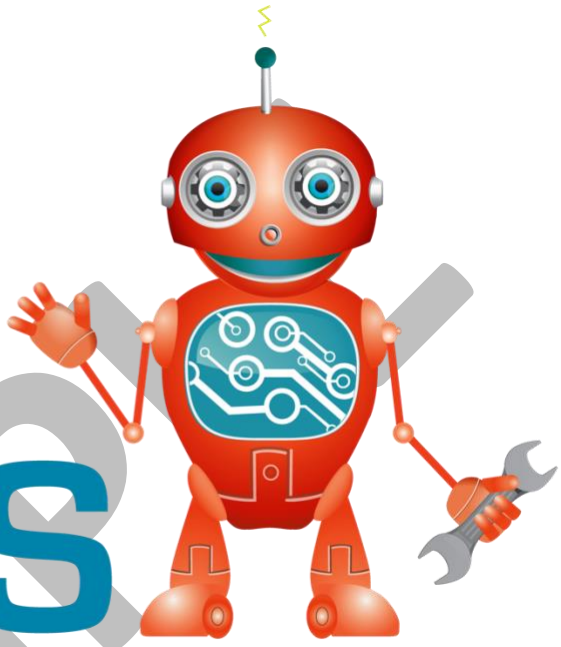
STEM MINDS



Science Technology Engineering Math

SAMPLE

THIS DOCUMENT IS INTENDED FOR SAMPLE PURPOSES ONLY AND SOME SECTIONS MAY BE REDACTED TO PROTECT THE COPYRIGHT. PLEASE VISIT WWW.STEMMINDS.COM TO PURCHASE THE FULL UNIT

STEM MINDS "ANIMATED STORIES WITH SCRATCH" UNIT COPYRIGHT

© 2020 by STEM Minds

This document is copyrighted material. Your single-user license gives you permission to use and reproduce these materials for your classroom only.

This license grants you permission to do the following:

- Keep electronic or paper copies of this document in multiple places for your own or student use on your home computer, school computer, personal devices, and on student-accessible devices
- Make photocopies of individual pages for classroom use
- Copy and paste text from this document into your own lesson plans for personal use
- Provide electronic access to students for the purposes of classroom instruction

Reproducing or sharing this document or any of the materials in this unit with other users – including electronic versions – is considered a violation of copyright. Before sharing this with other teachers or individuals, please purchase additional user licenses. Violation of copyright is strictly prohibited and may result in legal action. Thank you for respecting the time and effort it took to create this product.

If you have any questions or issues with this product, please contact us at info@stemminds.com

SAMPLE

DAY 2: GETTING STARTED WITH SCRATCH

Required Materials

- Student accounts for Scratch
- Laptops/tablets (1 per student)
- Storyboard planner (see Appendix B) and drawing materials

Learning Goals

We are learning to code with Scratch

- I can start, rename, save, and re-open my project
- I can use basic start blocks, movement blocks, and speech blocks in my code
- I can add a background to my project
- I can explain sequence in my own words

Minds On (10 Minutes)

Where possible, have all students join the teacher in community circle/on the carpet. When all students are seated, ask students to quickly summarize what they remember about coding from yesterday. Ensure that students are making connections with the idea that "coding is the language that computers speak", that we need to learn to code if we want to "speak" with computers, and that coding requires us to make sure that our instructions are very clear.

Next, ask students to share their ideas for what the word "sequence" means. You can further prompt them by asking them what it means "to put something in sequence". Some students may be familiar with this word and some students may not be.

When students have shared their ideas, you can explain that sequence very simply means to put something in order. You may wish to show a picture or write on the board/a piece of chart paper something that is out of sequence (for example, a group of numbers written as "3, 1, 5, 2, 4"). To put them in sequence would mean to put them in the correct order (e.g. "1, 2, 3, 4, 5").

Sequence is one of the most important concepts when it comes to coding. No matter what coding language you are working with, the idea of sequence stays the same. Very simply, sequence in coding means that the computer will read your code in the exact order that it is written from top to bottom.

In order to have our code work the way we want it to, we need to make sure that our instructions are appearing in the right order!

SAMPLE

Show students the following image and ask them if this code is written in the correct sequence.

[IMAGE REDACTED FOR SAMPLE]

Students should be able to identify that the code is not in the correct sequence. Using Think, Pair, Share or another discussion strategy, ask students to describe:

a) How this code would ACTUALLY work (i.e. where would the robot actually end up)?
b) How they can fix the code so that the robot ends up in the right place?

When students are done sharing their ideas, pause here to tell students that they will be getting started with coding with Scratch. Remind students that when they are working through their project, they are ALL going to make a mistake at some point. One of the mistakes they may make is putting their code in the wrong sequence. In fact, the best coders in the world make mistakes all the time, including things as seemingly simple as putting their code in the wrong sequence!

Tell students that it can be frustrating when our code is not working the way we want it to, especially when we think we've done everything right. However, that is no reason to give up, throw your iPad across the room, or explode into tears.

You may wish to take some time here to brainstorm some ideas with your students for what they can do if they are stuck or feeling frustrated, including:

- Taking deep breaths or taking a break
- Asking a friend to take a look at their code to see if they can find the mistake (we strongly encourage this strategy; sometimes all you really need is a fresh set of eyes!)
- Going step by step through their code to "read it out loud" to see if they can catch the mistake

At STEM Minds, we use the phrase "mistakes equals learning" to talk to students about how mistakes aren't just inevitable, they are actually HOW we learn. This is especially true when it comes to coding.

Working On It Part 1 (10 Minutes)

Tell students that, in this unit, they will be using a website called Scratch to make their own animated stories. Their story will have 3 scenes and at least two characters.

You may wish to show students the images found in the slides for this lesson so they have an idea of what backgrounds and characters they will have access to (please note this is not a comprehensive overview). Students do also have the option to create their own backgrounds and characters in Scratch.

SAMPLE

Before beginning their project, we strongly encourage you to have students complete a storyboard (see Appendix B for a printable). A short time to plan will ensure that students are able to stay more on track with their project. You may wish to have students show you their storyboard before being allowed to begin creating their project. What kind of stories students are creating is up to you!

Give students 10 minutes or so to complete their storyboard. As students in these grades are often very fond of drawing/colouring, it is important to emphasize that this is just supposed to be a "rough draft". Students do not need to perfectly colour in everything; they are just giving a general sense of what will happen in each scene.

In the storyboard, students should give a general idea of:

- Where the scene will take place
- What characters are in the scene
- What the character(s) will say/do (students will need to keep this short and simple)

Working On It Part 2 (20 Minutes)

When the ten minute time slot is up, have students come back together as a group. Any students who are not done their storyboard can finish it at a later time; as long as they have their first scene done they will be able to get started today.

In today's lesson, students will only be working on their first scene and just their first character. They will be taught how to add a background, sprites (another term for "characters"), and code simple actions such as making the character move and have speech/thought bubbles appear.

When students are done watching the video, they can get started on their project.

Students MUST create an account BEFORE beginning their project in order to ensure that their work saves.

Be sure to circulate throughout the class while students are working in order to provide guidance as well as mediate any conflicts/frustration.

SAMPLE

Important Notes:

- It is STRONGLY advised that you personally confirm with each student that they have created an account and renamed their project with their name. This will make it much easier for students to re-open their projects in future lessons.
- Be sure to give students a 5 minute and 1 minute warning before their time to work on their project is wrapping up so students can manage their time effectively.

Consolidation (5 - 10 Minutes)

Depending on your group of students, you may want to provide 3-5 minutes for students to get cleaned up, devices put away, and to rejoin you in community circle/on the carpet or to return to their seats.

When students have gathered, use Think, Pair, Share or another discussion strategy for students to discuss:

a) What challenges they faced today and how they overcame them
b) What they are planning to do as next steps for their project.
c) You may also ask students to discuss how the idea of "sequence" came up in their projects; when did they have to think about what order their code needed to appear in? Did they make any mistakes with their sequence?

SAMPLE