

## Creating and Programming Games

### Basic Teacher Notes

#### Suggestions

***You do not have to follow any of the advice given in this document. You may choose to follow it in your own way to take advantage of this learning resource. It is entirely up to you.***



#### ***What do you need***

- You need a projector and good speakers. Alternatively, individual headphones for each computer and a good Internet connection. Please note that if you choose the headset option and you have a class of students, your Internet connection should be really good to cope with all the streaming videos.

- Every student needs to have a computer or a laptop (Not a tablet)
- Internet connection is required

Initially, it is very important to emphasize that the course is designed as e-learning. That is, the student may have access from his home and may work relatively independently.

You will also note from the first lesson that a single view of each video is not enough for a student to master the curriculum. Each student, with their own distinct personality, has a personal learning path that differs from his or her classmates. One student may be content to watch a video once while someone else will need a lot more. You should note that in a class that has limited time, re-viewing videos is not possible for 2 reasons:

1. You will not have enough time.
2. Some students will get bored.

So access from home is essential. One of your roles is to support e-learning. You have to urge students to work at home. You need to help them get into a rhythm and help increase their commitment to the course. As time passes, your role should become less important in their learning process. According to the plan proposed below, the second game should be done by themselves.



**Important notice:**

The first lessons are related to the design of electronic games (up to Section 4). You do not want to waste much time on these modules. There is a risk that your students may get bored.

You will notice that students are very impatient and expect action. They want to make games right away. Your job is to explain that creating an electronic game is not a simple matter. It takes a lot of

patience and concentration to meet their goal.

It is also important to mention that some students may complain that games are very simple. You should explain to them that, the most difficult to create games, require special knowledge and skills that even IT graduates may not have. If they want to be able to create games with 3-dimensional graphics and environments at some point, they will first have to master the basic programming skills through this course.



Please first make sure that the students are already familiar with the platform. If not, you have to present it to them. They need to know how to connect to the system, how to get access to the course, points, levels, leader boards, how to reach you, and how to communicate with classmates. All the answers are in the "How to" courses which are free in the platform.

## Curriculum

The "Creating and Programming Games" e-course follows a spirited approach to learning as it first introduces important programming concepts, then repeats them through their use until these principles are used inadvertently by students.

---

25 modules makes up the course 'Programming and Creating Games.'

Modules 1 to 4 are introductory. They talk about electronic games and their original design. In those modules, you will also find enough general information about the Scratch application.

Modules 5–10 refer to basic programming concepts you need to know to be able to create games.

Modules 11–19 guide you step by step to creating the game 'The Banana's Hunt.'

Modules 20–25 guide you to make the game 'Grab the bone.'

At the end of the course, students will have learnt the basics concepts of computer programming and will be able to create simple electronic games with the Scratch application.

### Analytical Curriculum

<b>Modules</b>	<b>Educational concepts</b>	<b>Suggested teaching hours</b>
Module 1	The importance of designing a project	1 hour
Module 2	Electronic Games categories and game planning	1 hour
Module 3 and Module 4	Meet Scratch online and offline, Test your Scratch	1 hour
Module 5	Basic Programming Concepts – Coordinates	2 hours
Module 6	Basic Programming Concepts - Variables	2 hours
Module 7	Basic Programming Concepts - Sequence Structure	2 hours
Module 8	Basic Programming Concepts – Selection Structure	2 hours
Module 9	Basic Programming Concepts – Iteration Structure	2 hours
Module 10	Basic Programming Concepts – Events and message exchange	2 hour

Module 11 & 12	Game presentation and game play	1 hour
Module 13	Game Development - Sprite movement by user's mouse	1 hour
Module 14	Game Development - Automatic Random Motion of an Enemy Character	1 hour
Module 15	Game Development - How Our Hero Will Lose Extra game development	2 hours
Module 16	Game Development - The Enemy Character Following the Hero	1 hour
Module 17	Game Development - Show Enemy Character at Random Position	1 hour
Module 18 - 19	Game Development - The Game Gets Difficult as Time Passes – finish the game and discuss about its improvement.	2 hours
		24 hours



**Important Notice.**

The provided modules are 25. We suggest that you let students follow modules 20-25 at their own at their homes. They have surely learnt the knowledges and experience required to succeed. The teachers may choose to continue the lessons at schools. In that case, accordingly to our experience, 6 teaching hours would be enough.

## Course plan

<p>Module 1</p> 	<p>Suggestion: 1 teaching hour</p> <ul style="list-style-type: none"><li>• Introductions.</li><li>• Watch the 1st video from the first lesson</li><li>• Discuss the video for a while. Ask students what they liked in the video and if they have any questions.</li><li>• Watch the 2<sup>nd</sup> video.</li><li>• Discuss the video again.</li></ul> <p><b>DO NOT FORGET!</b> Pause the video whenever you feel it is necessary. It is important to clarify any difficult concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat or explain important topics, but also to ensure the increased attention of students.</p> <p><b>Take the quiz.</b> They have to take the quiz into their account in order to gain points. You will see that the "winning points" process is extremely important to students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.</p>
<p>Module 2</p> 	<p>Suggestion: 1 teaching hour</p> <ul style="list-style-type: none"><li>• Watch the 1st video from the first lesson</li><li>• Discuss the video for a while. Ask students what they liked in the video and if they have any questions.</li><li>• Watch the 2nd video.</li><li>• Discuss the video again.</li></ul> <p><b>DO NOT FORGET!</b> Pause the video whenever you feel it is necessary. It is important to clarify any difficult concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat or explain important topics, but also to ensure the increased attention of students.</p> <p><b>Take the quiz.</b> They have to take the quiz into their account in order to gain points. You will see that the</p>

	<p>"winning points" process is extremely important to students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.</p>
<p>Module 3 and Module 4</p> 	<p>Suggestion: 1 teaching hour</p> <p>Make sure Scratch software is NOT installed into the classroom's computers. Students should install it. Make sure that students are going to try this also at home.</p> <ul style="list-style-type: none"> <li>• Watch the 1st video from the first lesson</li> <li>• Discuss the video for a while. Ask students what they liked in the video and if they have any questions.</li> <li>• Take the activity of module 4. Make sure, the students, to take the activity at home too</li> </ul> <p><b>DO NOT FORGET!</b> Pause the video whenever you feel it is necessary. It is important to clarify any difficult concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat or explain important topics, but also to ensure the increased attention of students.</p> <p><b>Take the quiz.</b> They have to take the quiz into their account in order to gain points. You will see that the "winning points" process is extremely important to students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.</p>
<p>Module 5</p>	<p>Suggestion: 2 teaching hours</p> <p>First hour</p> <ul style="list-style-type: none"> <li>• Watch the video</li> <li>• Discuss the video for a while. Ask students what they liked in the video and if they have any questions.</li> <li>• Take the quiz</li> </ul> <p>Second hour</p> <ul style="list-style-type: none"> <li>• Watch the video again but without any pause.</li> <li>• Play the game! It is important to do this. It will help students too much to get the basics.</li> </ul>



**REMEMBER.** It is a difficult programming aspect. Do not put pressure on the students. Just make sure that they got the basics. That is that there are 2 numbers that indicate the sprite's position on the stage.

**REMEMBER.** The particular concept is going to be addressed many times during the next lessons. The students are going to understand it by practicing.

**DO NOT FORGET!** Pause the video whenever you feel it is necessary. It is important to clarify any difficult concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat or explain important topics, but also to ensure the increased attention of students.

**Take the quiz.** They have to take the quiz into their account in order to gain points. You will see that the "winning points" process is extremely important to students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.

Module 6

Suggestion: 2 teaching hours

First hour

- Watch the video
- Discuss the video for a while. Ask students what they liked in the video and if they have any questions.
- Solve the first exercise.

Second hour

- Watch the video again but without any pause
- Discuss the exercise you have already made about this programming aspect
- Solve the second exercise



**REMEMBER.** It is a difficult programming aspect. Do not put pressure on the students. Just make sure that they got the basics. That is, that there are named boxes inside computer that they keep the data secure.

**REMEMBER.** The particular concept is going to be addressed many times during the next lessons. The students are going to understand it by practicing.



**REMEMBER.** Inside web platform both you, and your students, can find the exercise's solutions

**DO NOT FORGET!** Pause the video whenever you feel it is necessary. It is important to clarify any difficult concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat or explain important topics, but also to ensure the increased attention of students.

**Take the quiz.** They have to take the quiz into their account in order to gain points. You will see that the "winning points" process is extremely important to students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.

<p>Module 7</p>   	<p>Suggestion: 2 teaching hours</p> <p>First hour</p> <ul style="list-style-type: none"> <li>• Watch the video</li> <li>• Discuss the video for a while. Ask students what they liked in the video and if they have any questions.</li> <li>• Solve the first exercise.</li> </ul> <p>Second hour</p> <ul style="list-style-type: none"> <li>• Watch the video again but without any pause</li> <li>• Discuss the exercise you have already made about this programming aspect</li> <li>• Solve the second exercise</li> </ul> <p><b>REMEMBER.</b> The particular concept is going to be addressed many times during the next lessons. The students are going to understand it by practicing.</p> <p><b>REMEMBER.</b> Inside web platform both you, and students, can find the exercise's solutions.</p> <p><b>DO NOT FORGET!</b> Pause the video whenever you feel it is necessary. It is important to clarify any difficult concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat or explain important topics, but also to ensure the increased attention of students.</p> <p><b>Take the quiz.</b> They have to take the quiz into their account in order to gain points. You will see that the "winning points" process is extremely important to students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.</p>
<p>Module 8</p>	<p>Suggestion: 2 teaching hours</p> <p>First hour</p> <ul style="list-style-type: none"> <li>• Watch the video</li> <li>• Discuss the video for a while. Ask students what they liked in the video and if they have any questions.</li> </ul>

 	<ul style="list-style-type: none"> <li>• Solve the first exercise.</li> </ul> <p>Second hour</p> <ul style="list-style-type: none"> <li>• Watch the video again but without any pause</li> <li>• Discuss the exercise you have already solve about this programming aspect</li> <li>• Solve the second exercise</li> </ul> <p><b>REMEMBER.</b> The particular concept is going to be addressed many times during the next lessons. The students are going to understand it by practicing.</p> <p><b>REMEMBER.</b> Inside web platform you, and students, can find the exercise's solutions</p> <p><b>DO NOT FORGET!</b> Pause the video whenever you feel it is necessary. It is important to clarify any difficult concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat or explain important topics, but also to ensure the increased attention of students.</p> <p><b>Take the quiz.</b> They have to take the quiz into their account in order to gain points. You will see that the "winning points" process is extremely important to students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.</p>
<p>Module 9</p>	<p>Suggestion: 2 teaching hours</p> <p>First hour</p> <ul style="list-style-type: none"> <li>• Watch the video</li> <li>• Discuss the video for a while. Ask students what they liked in the video and if they have any questions.</li> <li>• Solve the first exercise.</li> </ul> <p>Second hour</p> <ul style="list-style-type: none"> <li>• Watch the video again but without any pause</li> <li>• Discuss the exercise you have already solve about this programming aspect</li> <li>• Solve the second exercise</li> </ul>



**REMEMBER.** The particular concept is going to be addressed many times during the next lessons. The students are going to understand it by practicing.

**REMEMBER.** Inside web platform you, and students, can find the exercise's solutions

**DO NOT FORGET!** Pause the video whenever you feel it is necessary. It is important to clarify any difficult concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat or explain important topics, but also to ensure the increased attention of students.

**Take the quiz.** They have to take the quiz into their account in order to gain points. You will see that the "winning points" process is extremely important to students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.

Module 10

Suggestion: 2 teaching hours

First hour

- Watch the video
- Discuss the video for a while. Ask students what they liked in the video and if they have any questions.
- Solve the first exercise.

Second hour

- Watch the video again but without any pause
- Discuss the exercise you have already solve about this programming aspect
- Solve the second exercise



**REMEMBER.** The particular concept is going to be addressed many times during the next lessons. The students are going to understand it by practicing.

**REMEMBER.** Inside web platform you, and students, can find the exercise's solutions

**DO NOT FORGET!** Pause the video whenever you feel it is necessary. It is important to clarify any difficult

	<p>concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat or explain important topics, but also to ensure the increased attention of students.</p> <p><b>Take the quiz.</b> They have to take the quiz into their account in order to gain points. You will see that the "winning points" process is extremely important to students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.</p>
<p>Module 11 &amp; 12</p> 	<p>Suggestion: 1 teaching hour</p> <ul style="list-style-type: none"> <li>• Watch the video</li> <li>• Discuss the video. Try to think about the code and coding structures.</li> <li>• Let the students play the game. Make sure they enjoy it. They deserve it.</li> </ul> <p><b>REMEMBER.</b> The game includes points and this maybe raise competitive issues inside the class. Make sure this is done in an environment of mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.</p>
<p>Module 13</p> 	<p>Suggestion: 1 teaching hour</p> <ul style="list-style-type: none"> <li>• Watch the video</li> <li>• Discuss the video for a while. Ask students what they liked in the video and if they have any questions.</li> <li>• Take the quiz.</li> </ul> <p><b>DO NOT FORGET!</b> Pause the video whenever you feel it is necessary. It is important to clarify any difficult concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat or explain important topics, but also to ensure the increased attention of students.</p> <p><b>Take the quiz.</b> They have to take the quiz into their account in order to gain points. You will see that the "winning points" process is extremely important to</p>

	<p>students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.</p> <p><b>REMEMBER.</b> If you are using projector for showing the videos you maybe face problems because of the distance the students might be from the screen. It is possible that they won't be able to see the code well enough. Keep that in mind and try to help them by pausing the video at the right time.</p>
<p>Module 14</p>  	<p>Suggestion: 1 teaching hour</p> <ul style="list-style-type: none"> <li>• Watch the video</li> <li>• Discuss the video for a while. Ask students what they liked in the video and if they have any questions.</li> <li>• Work on the Scratch to accomplish video's suggestions</li> </ul> <p><b>DO NOT FORGET!</b> Pause the video whenever you feel it is necessary. It is important to clarify any difficult concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat or explain important topics, but also to ensure the increased attention of students.</p> <p><b>Take the quizzes.</b> They have to take the quizzes into their account in order to gain points. You will see that the "winning points" process is extremely important to students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.</p> <p><b>REMEMBER.</b> If you are using projector for showing the videos you maybe face problems because of the distance the students might be from the screen. It is possible that they won't be able to see the code well enough.</p> <p>Keep that in mind and try to help them by pausing the video at the right time.</p>
<p>Module 15</p>	<p>Suggestion: 2 teaching hours</p> <p>First hour</p> <ul style="list-style-type: none"> <li>• Watch the video</li> </ul>

  	<ul style="list-style-type: none"> <li>• Discuss the video for a while. Ask students what they liked in the video and if they have any questions.</li> <li>• Work on the Scratch to accomplish video's suggestions</li> </ul> <p>Second hour</p> <ul style="list-style-type: none"> <li>• Discuss all the work you have accomplished so far</li> <li>• Do the exercise (create a game)</li> </ul> <p><b>DO NOT FORGET!</b> Pause the video whenever you feel it is necessary. It is important to clarify any difficult concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat or explain important topics, but also to ensure the increased attention of students.</p> <p><b>Take the quizzes.</b> The students have to take the quizzes into their account in order to gain points. You will see that the "winning points" process is extremely important to students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.</p> <p><b>REMEMBER.</b> If you are using projector for showing the videos you maybe face problems because of the distance the students might be from the screen. It is possible that they won't be able to see the code well enough. Keep that in mind and try to help them by pausing the video at the right time.</p>
<p>Module 16</p>  	<p>Suggestion: 1 teaching hour</p> <ul style="list-style-type: none"> <li>• Watch the video</li> <li>• Discuss the video for a while. Ask students what they liked in the video and if they have any questions.</li> <li>• Work on the Scratch to accomplish video's suggestions</li> </ul> <p><b>DO NOT FORGET!</b> Pause the video whenever you feel it is necessary. It is important to clarify any difficult concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat</p>

	<p>or explain important topics, but also to ensure the increased attention of students.</p> <p><b>Take the quiz.</b> Students have to take the quiz into their account in order to gain points. You will see that the "winning points" process is extremely important to students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.</p> <p><b>REMEMBER.</b> If you are using projector for showing the videos you maybe face problems because of the distance the students might be from the screen. It is possible that they won't be able to see the code well enough. Keep that in mind and try to help them by pausing the video at the right time.</p>
<p>Module 17</p>  	<p>Suggestion: 1 teaching hour</p> <ul style="list-style-type: none"> <li>• Watch the video</li> <li>• Discuss the video for a while. Ask students what they liked in the video and if they have any questions.</li> <li>• Work on the Scratch to accomplish video's suggestions</li> <li>• Solve the exercise</li> </ul> <p><b>DO NOT FORGET!</b> Pause the video whenever you feel it is necessary. It is important to clarify any difficult concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat or explain important topics, but also to ensure the increased attention of students.</p> <p><b>Take the quiz.</b> They have to take the quiz into their account in order to gain points. You will see that the "winning points" process is extremely important to students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.</p> <p><b>REMEMBER.</b> If you are using projector for showing the videos you maybe face problems because of the distance the students might be from the screen. It is possible that they won't be able to see the code well enough. Keep that in mind and try to help them by pausing the video at the right time.</p>

	<p><b>REMEMBER.</b> Inside web platform both you, and students, can find the exercise's solutions</p>
<p>Module 18</p>  	<p>Suggestion: 1 teaching hour</p> <ul style="list-style-type: none"> <li>• Watch the video</li> <li>• Discuss the video for a while. Ask students what they liked in the video and if they have any questions.</li> <li>• Work on the Scratch to accomplish video's suggestions</li> </ul> <p><b>DO NOT FORGET!</b> Pause the video whenever you feel it is necessary. It is important to clarify any difficult concept at the time it is being talked about. It's good practice to stop a 5 minute video 1 or 2 times to repeat or explain important topics, but also to ensure the increased attention of students.</p> <p><b>Take the quiz.</b> Students have to take the quiz into their account in order to gain points. You will see that the "winning points" process is extremely important to students and they will compete for it. Make sure this is done in an environment with mutual respect and acceptance. You should talk about this in order to avoid very competitive conditions that can harm the classroom.</p> <p><b>REMEMBER.</b> If you are using projector for showing the videos you maybe face problems because of the distance the students might be from the screen. It is possible that they won't be able to see the code well enough. Keep that in mind and try to help them by pausing the video at the right time.</p>
<p>Module 19</p>	<p>Play millionaires Game. Let the kids compete. It is a game which will help them remember and recall many important issues.</p>