nclab

More Than Coding

How to Teach Karel Coding

http://nclab.com

The purpose of this presentation

Why start with Karel?

What will my students learn?

- How will they learn it?
- How are they assessed?

How does Karel fit into my curriculum?

What else is there beside the course?

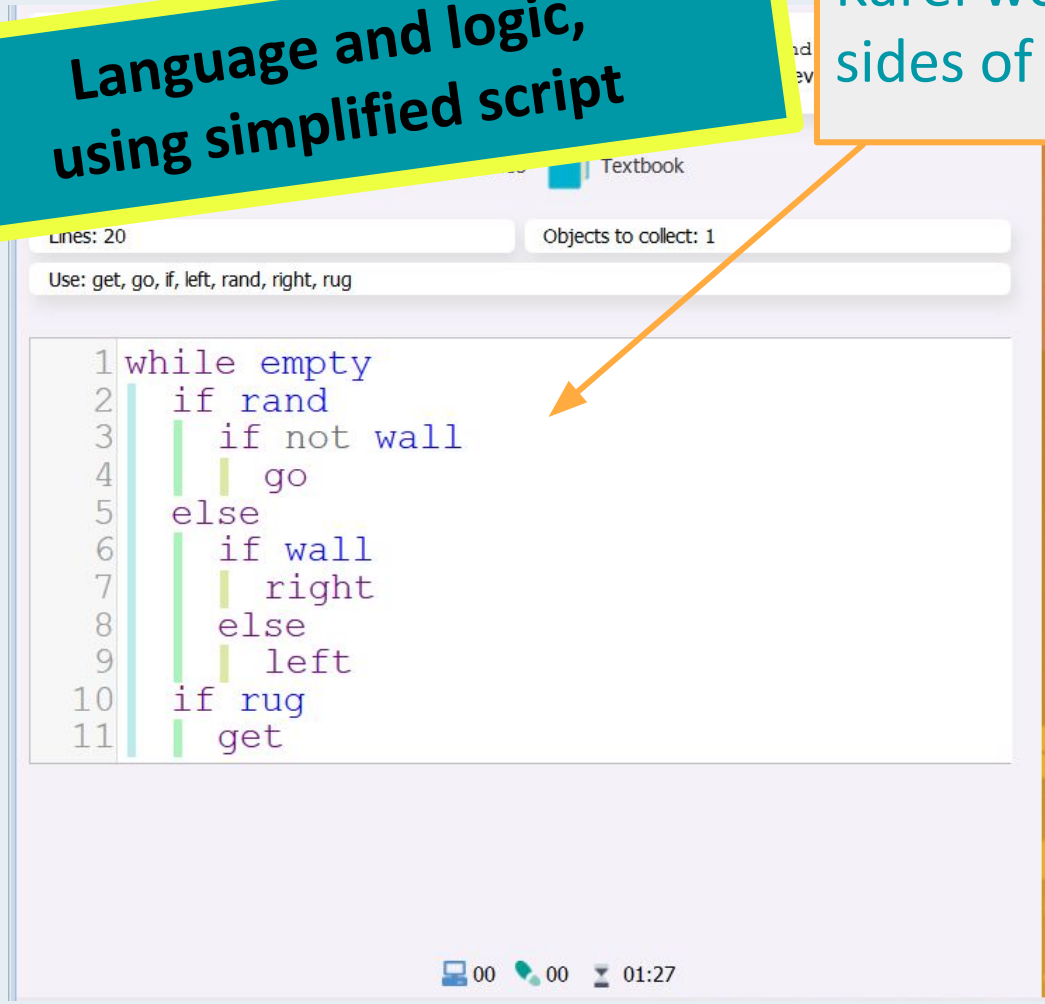
Why start with Karel?

Before tackling complex languages, computations, and tasks, students need to develop **logical reasoning**.

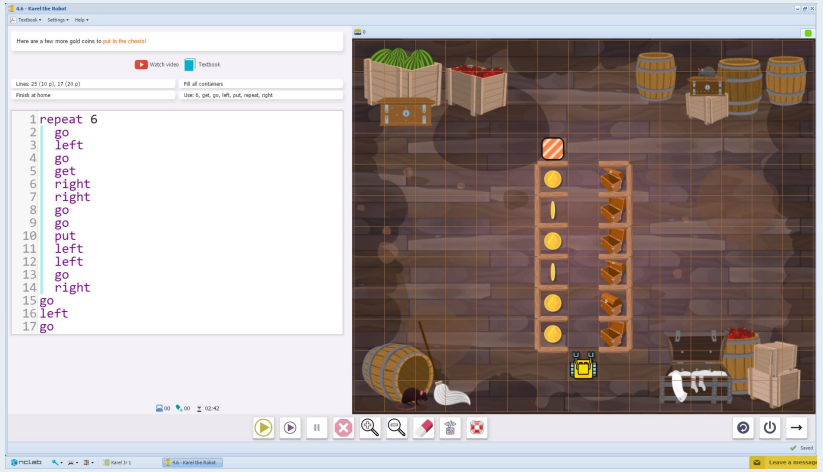
Language and logic, using simplified script

Karel works with both sides of the brain:

Visual/spatial/kinetic/auditory instant feedback, using mazes



What do my students learn?



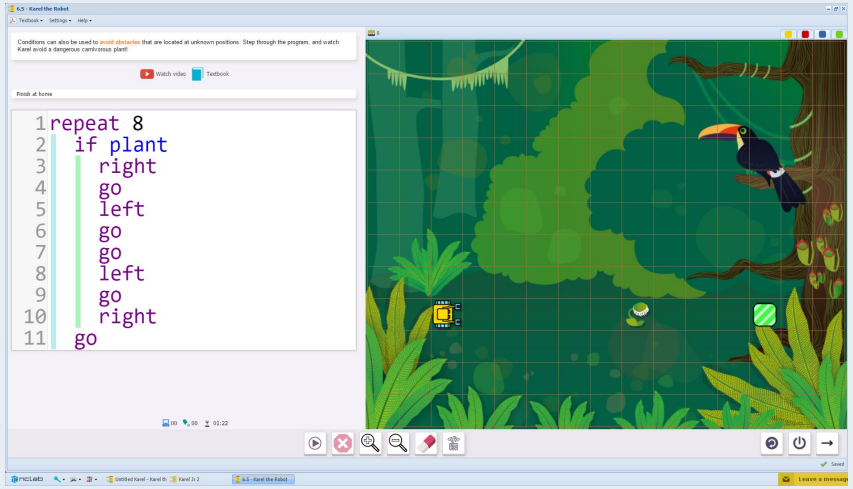
Beginning level skills - quick to learn

UNIT 1: Students learn how to guide the robot, type simple programs, recognize repeated patterns, and use the repeat loop.

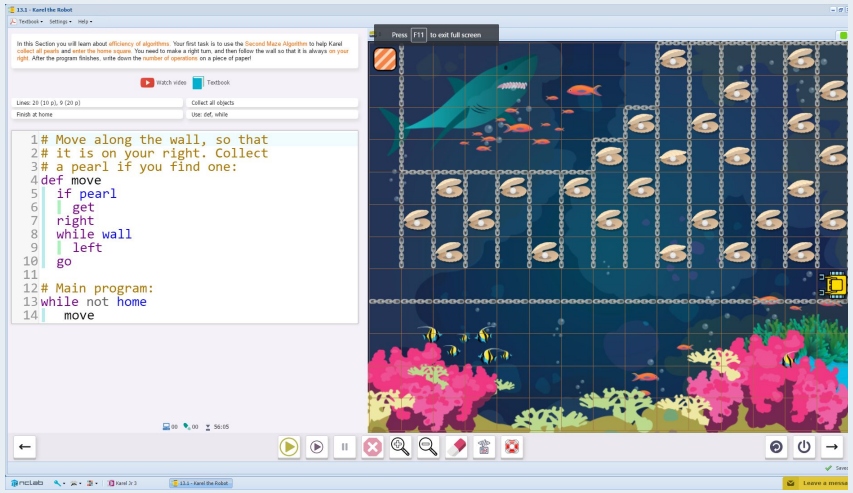
At the end of this unit, they should be able to create their own mazes with features such as nested loops.

What will my students learn?

Intermediate level skills



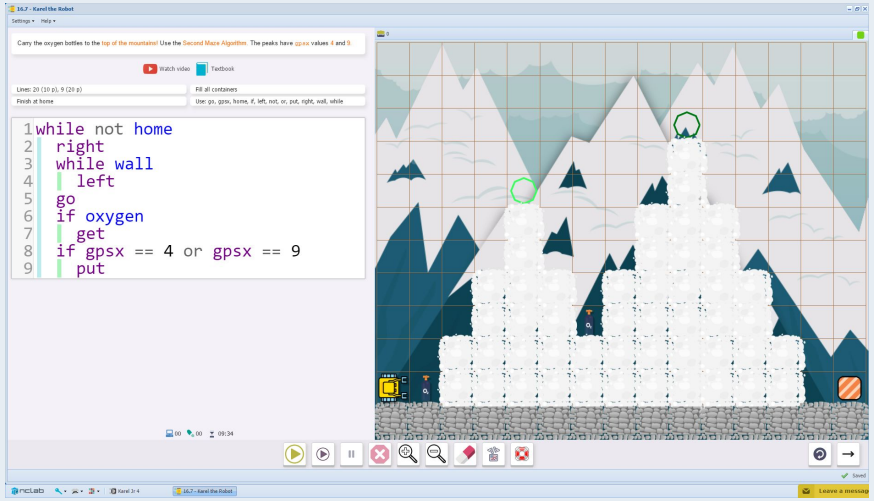
UNIT 2: Students will learn how to use **if-else conditions**, the **while loop**, and how to combine loops and conditions together.



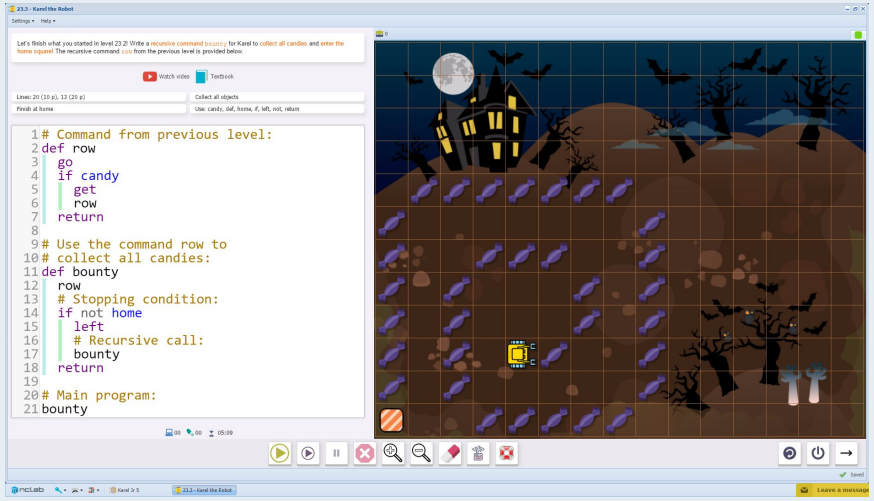
UNIT 3: Students will learn how to use **custom commands**, local and global **variables**, and **functions** that return values.

What will my students learn?

Advanced level skills



UNIT 4: Students will learn how to use **GPS coordinates**, **comparison symbols**, **Boolean values**, and **random variables**.



UNIT 5: Students will learn how to make **random decisions**, use **recursion**, and solve **advanced** programming challenges.

How do my students learn?

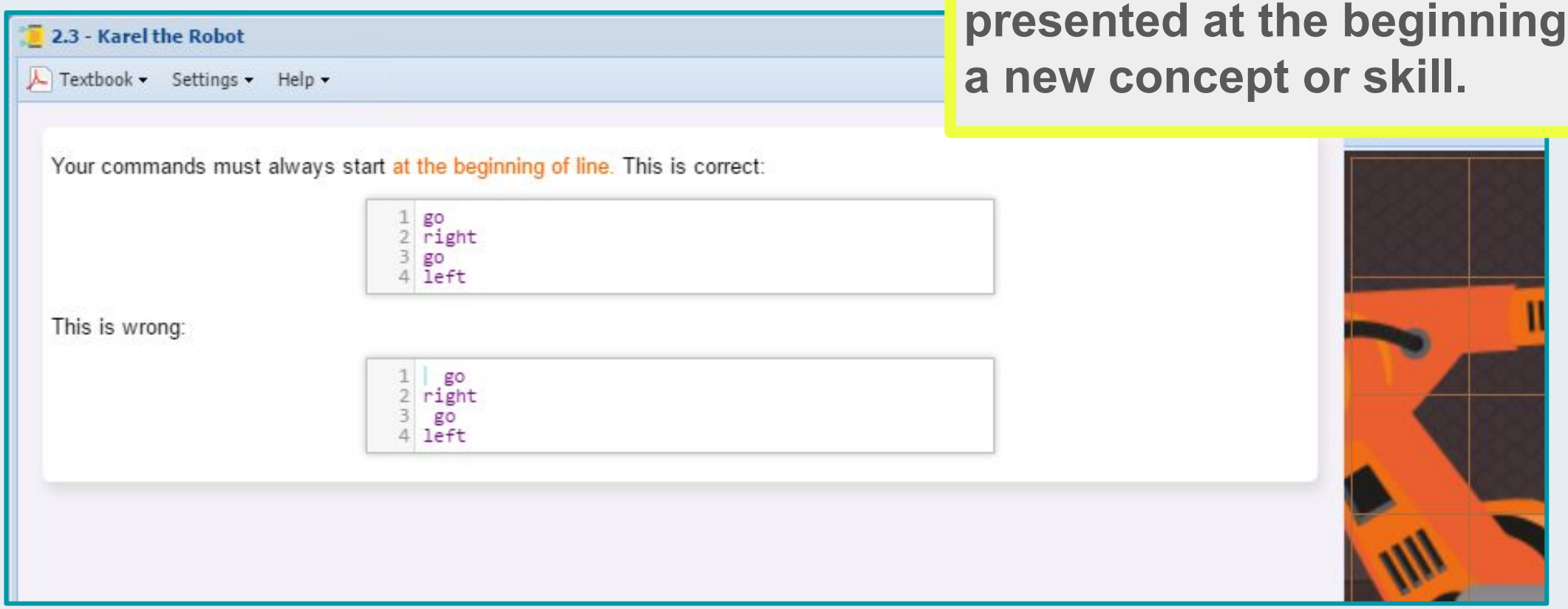
In this Section you will learn how to guide Karel by typing commands. Before you go further, watch this short video:

YouTube link: http://youtu.be/s4Ewl1p2wX0

Instructional YouTube videos, presented at the beginning of a new concept and available any time.

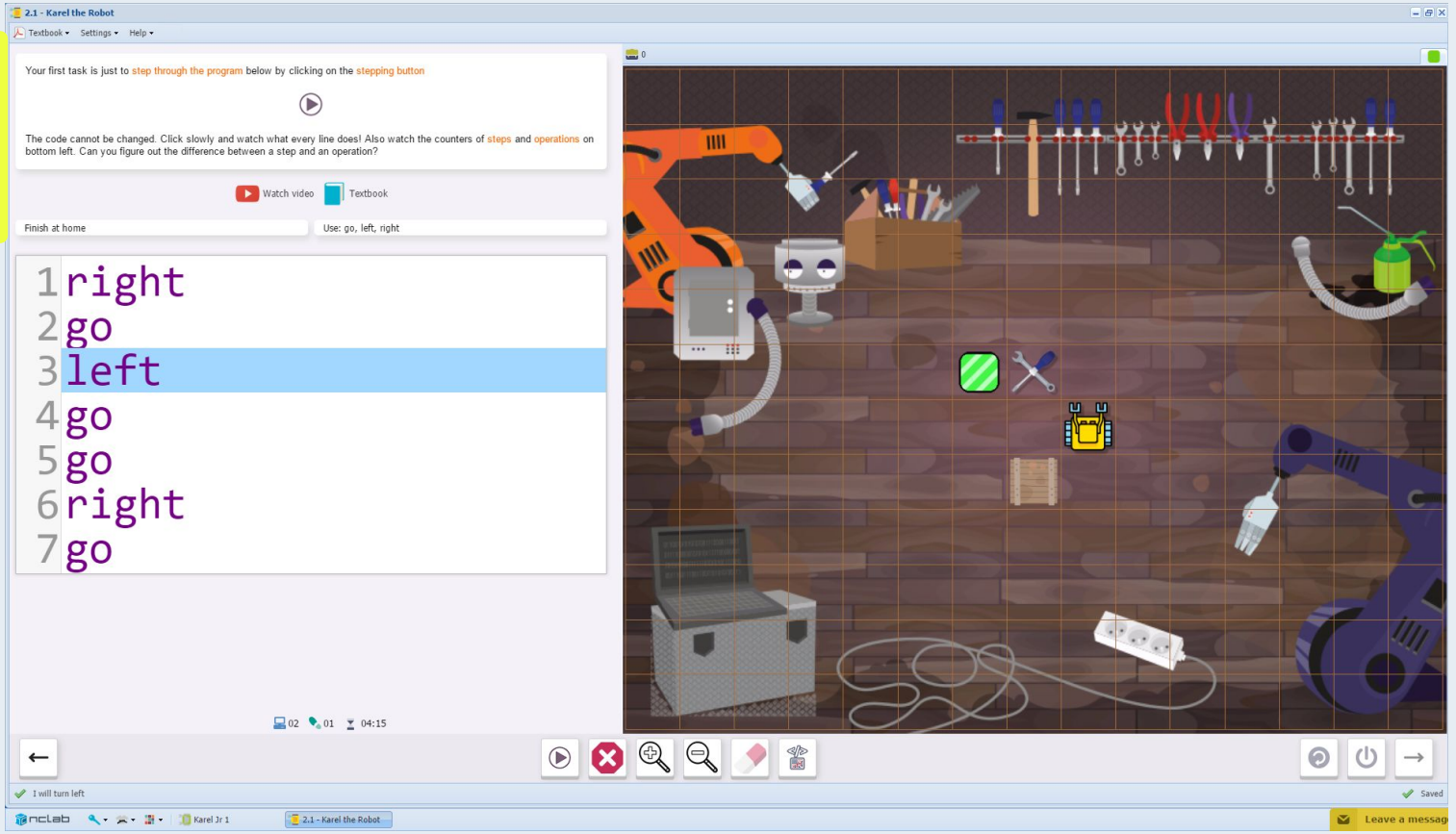
How do my students learn?

Instructional screens, presented at the beginning of a new concept or skill.



How do my students learn?

Step by step demonstration levels.



How do my students learn?

There are 5 units in Karel

UNIT

Each unit is made up of 5 sections

SECTION

A section represents a concept arc.

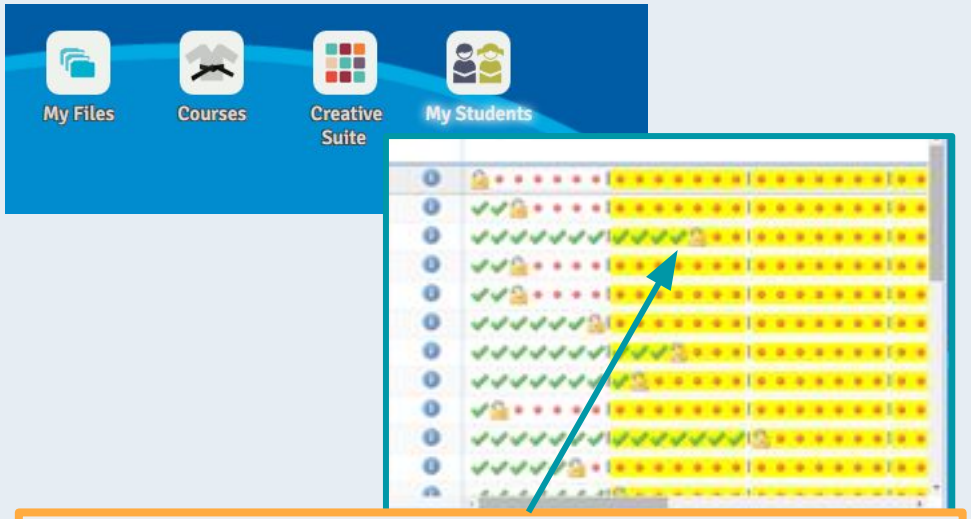
Each section is made up of 7 levels

LEVEL

A level represents one step of instruction or practice within the concept arc.

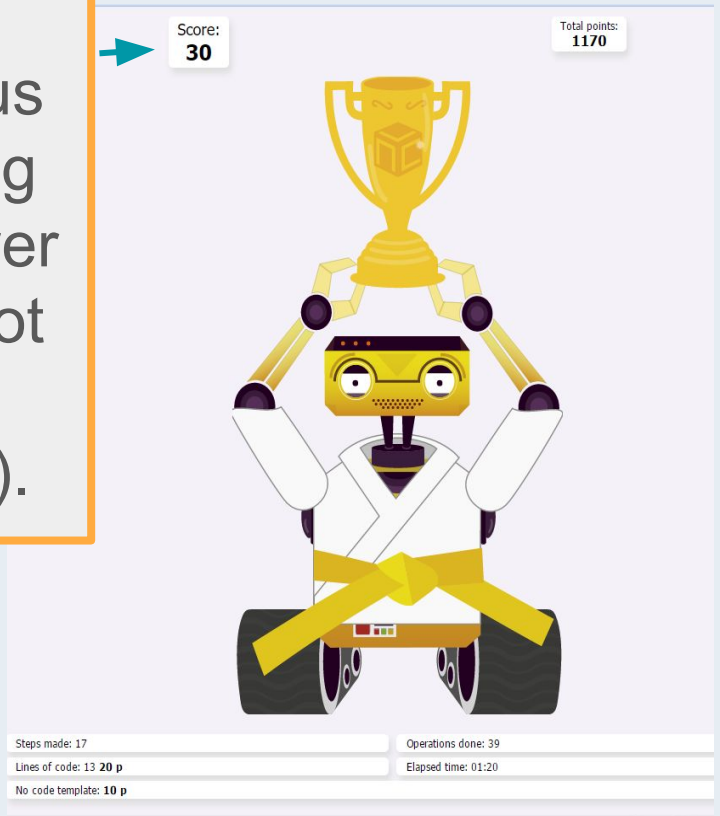
Systematic instruction and practice with gradual release - 175 levels in all.

How do I monitor and assess my students?



My Students shows how many points students have earned and what levels they are working on. You can get precise information by clicking on a completed level.

Students earn points for each level, with bonus points for writing the code in fewer lines, and for not using the code template (hints).



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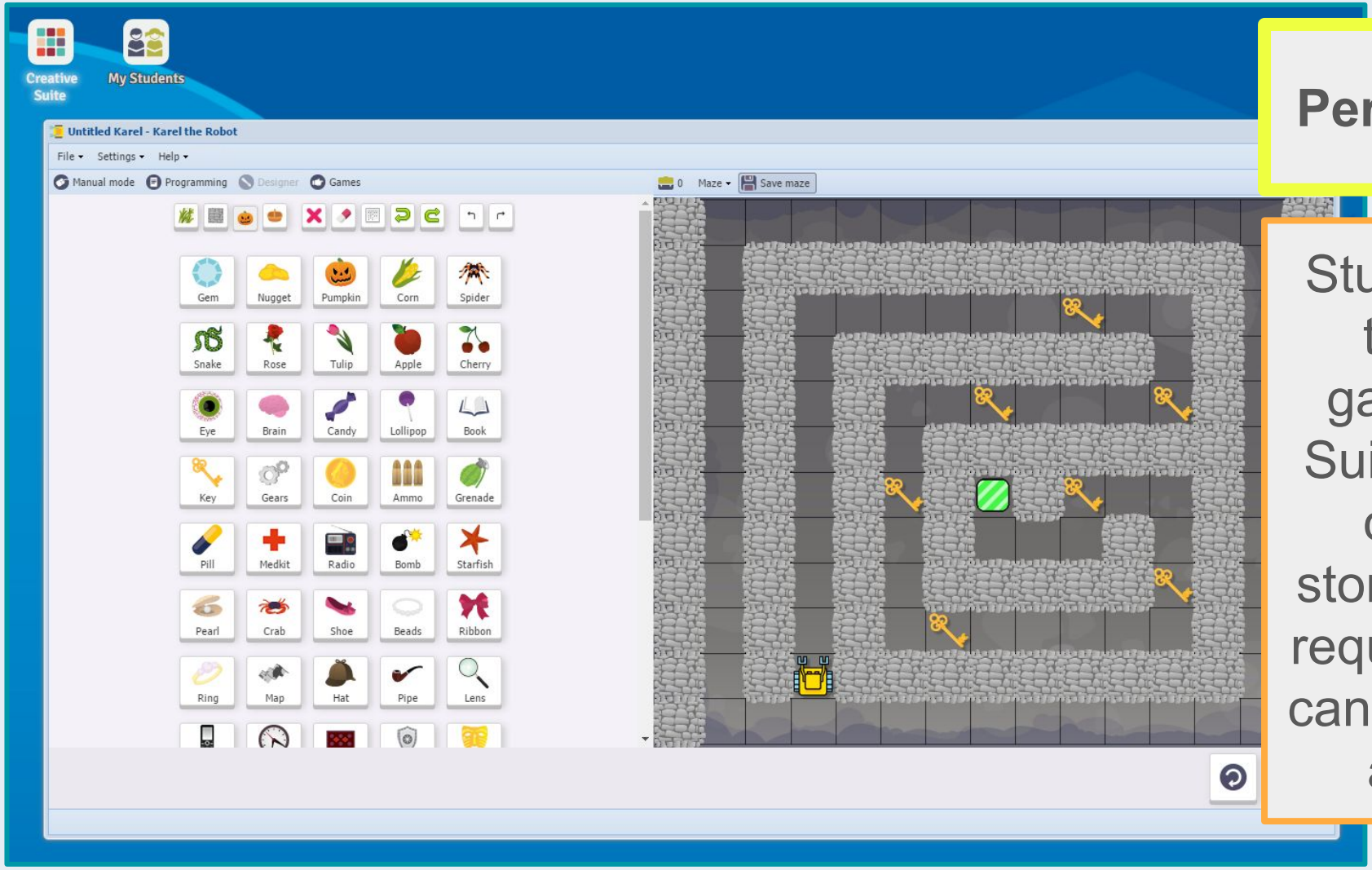
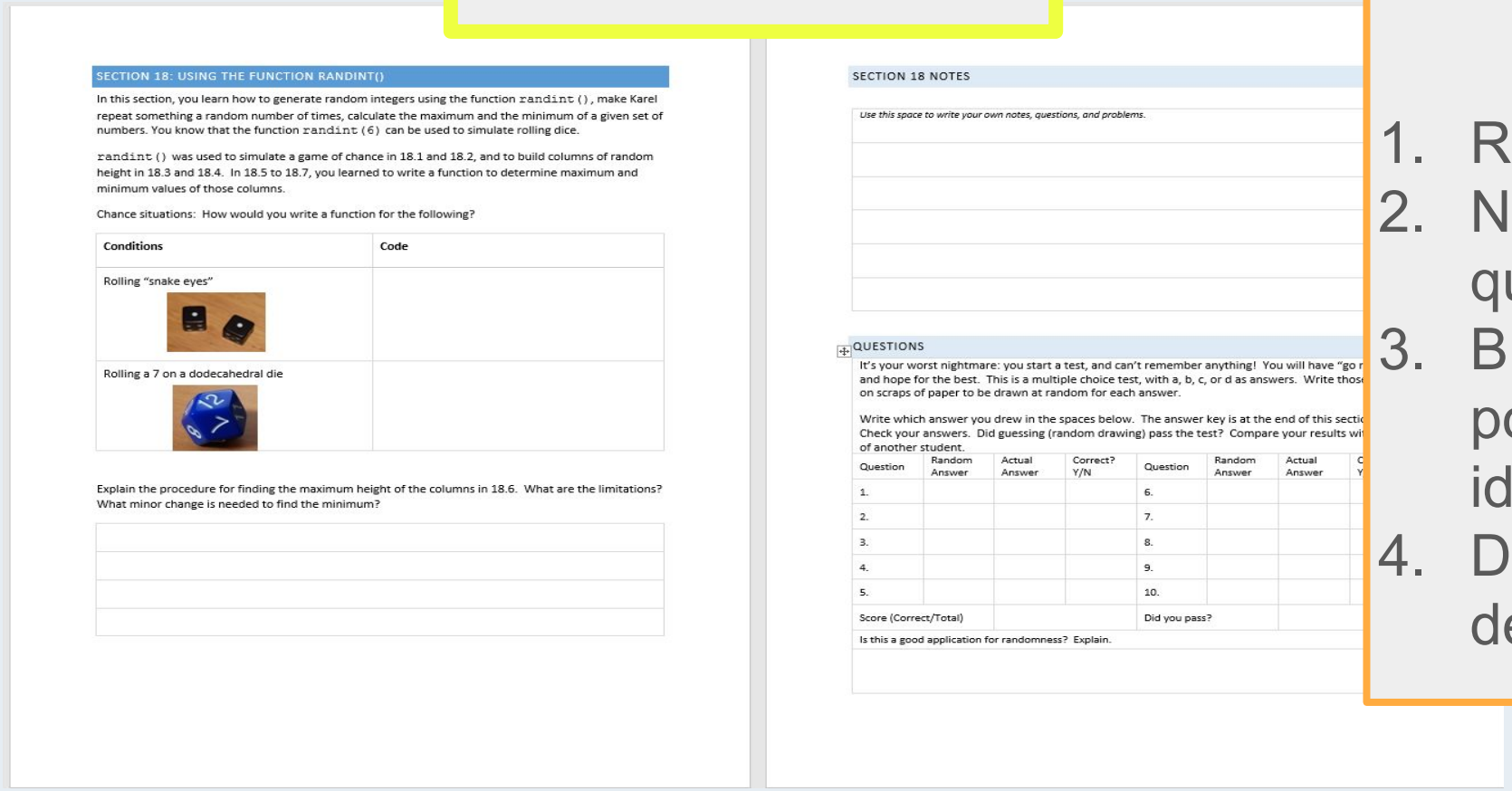


Performance Tasks

Students can create their own Karel games in Creative Suite, complete with code solutions, storylines, and game requirements. These can be saved, shared and published.

How do I monitor and assess my students?

Student Journals



SECTION 18: USING THE FUNCTION RANDINT()

In this section, you learn how to generate random integers using the function `randint()`, make Karel repeat something a random number of times, calculate the maximum and the minimum of a given set of numbers. You know that the function `randint(6)` can be used to simulate rolling dice.

`randint()` was used to simulate a game of chance in 18.1 and 18.2, and to build columns of random height in 18.3 and 18.4. In 18.5 to 18.7, you learned to write a function to determine maximum and minimum values of those columns.

Chance situations: How would you write a function for the following?

Conditions	Code
Rolling "snake eyes"	
Rolling a 7 on a dodecahedral die	

Explain the procedure for finding the maximum height of the columns in 18.6. What are the limitations? What minor change is needed to find the minimum?

SECTION 18 NOTES

Use this space to write your own notes, questions, and problems.

QUESTIONS

It's your worst nightmare: you start a test, and can't remember anything! You will have "go
and hope for the best. This is a multiple choice test, with a, b, c, or d as answers. Write thos
on scraps of paper to be drawn at random for each answer.

Write which answer you drew in the spaces below. The answer key is at the end of this secti
Check your answers. Did guessing (random drawing) pass the test? Compare your results wi
of another student.

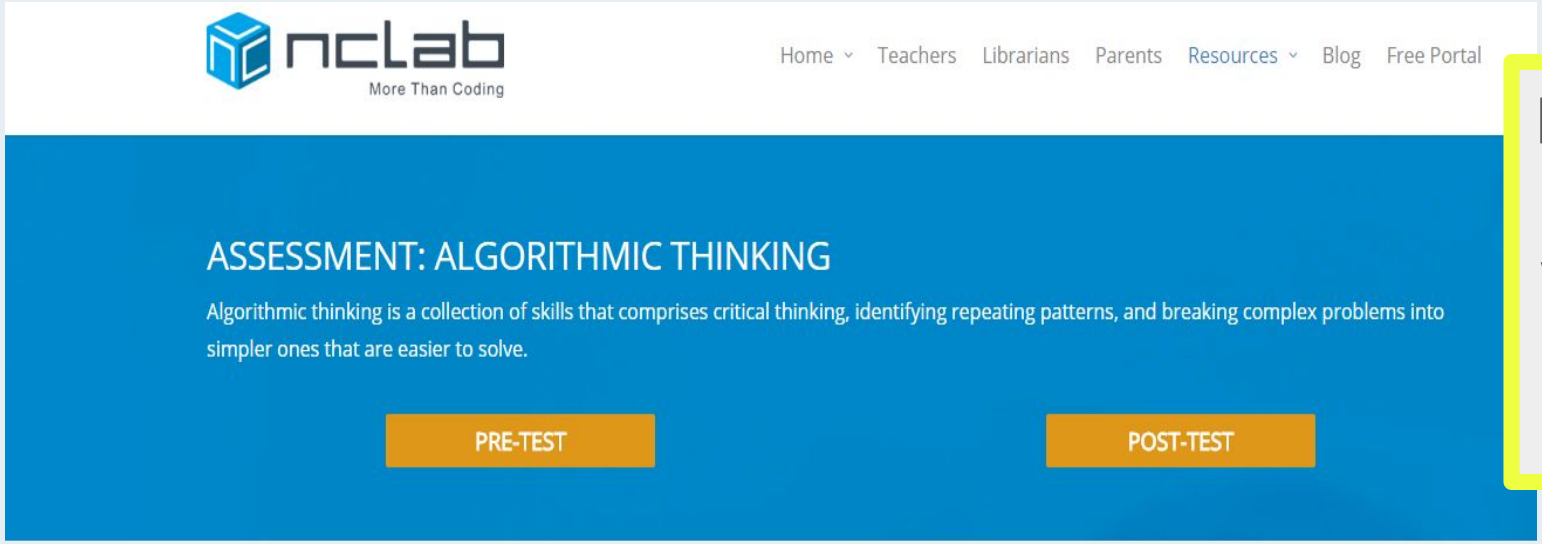
Question	Random Answer	Actual Answer	Correct? Y/N	Question	Random Answer	Actual Answer	C Y
1.				6.			
2.				7.			
3.				8.			
4.				9.			
5.				10.			
Score (Correct/Total)				Did you pass?			

Is this a good application for randomness? Explain.

Each Section has 4 pages:

1. Recall questions
2. Notes/Application questions
3. Bulletin Board to post links, pictures, ideas
4. Design page for designing games

How do I monitor and assess my students?



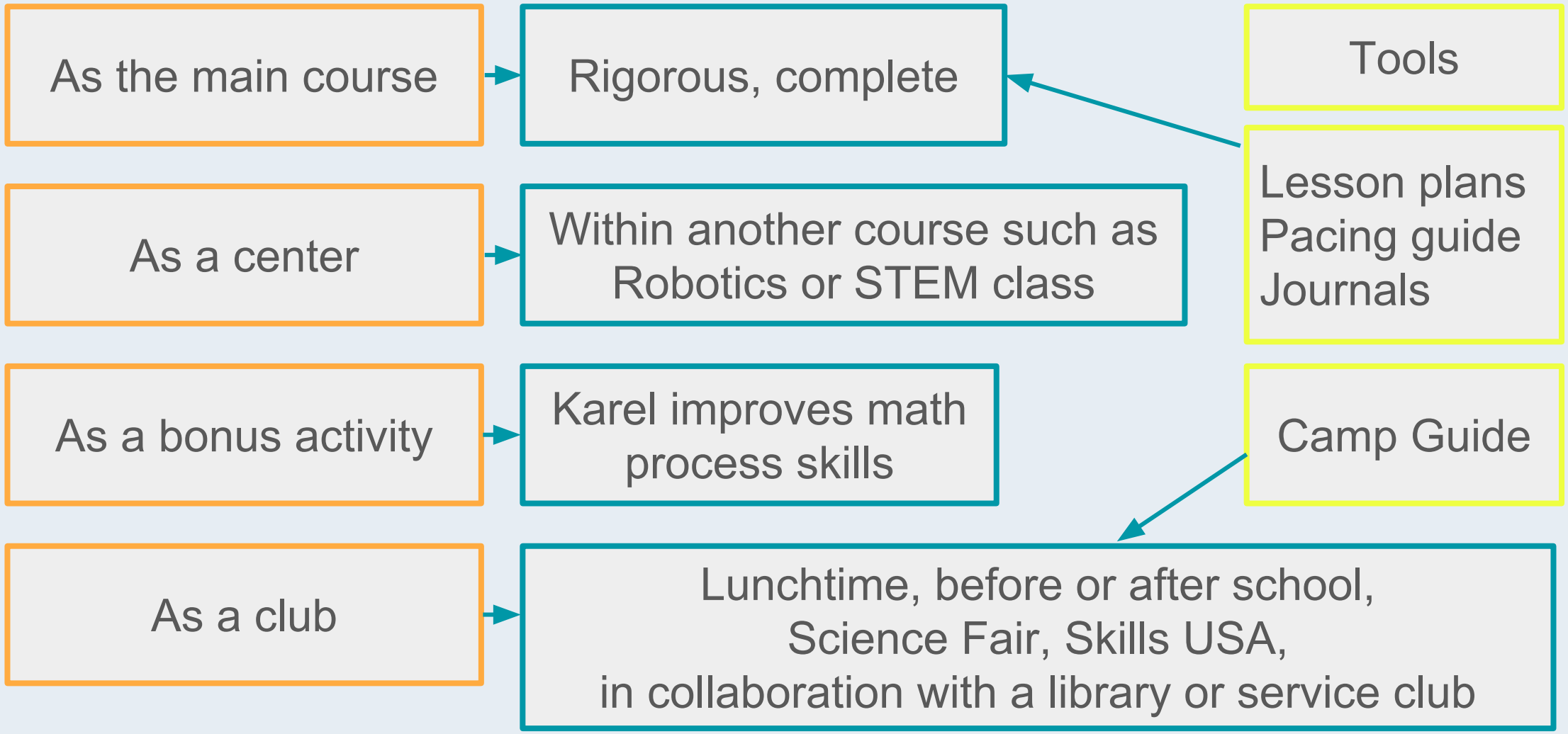
Have students take the pre-test on the NCLab website before starting Karel, then the post-test afterwards

Coming soon...

Built-in quizzes

End of unit assessments

How does Karel fit in my curriculum?



What else is there beside this course?

Karel Hour of Code

http://hoc.nclab.com

for a quick demo

More Courses

Turtle Coding
Python Coding
3D Modeling

Creative Suite

Free programming, modeling, publishing, math tools and more

Cloud Storage

Free cloud storage for files created in Creative Suite

Online Gallery

Students can submit their games to be published

Blog

Ideas, events, and contests on our blog
(Newsletter coming soon)

How Can We Help You?

Email and phone support?

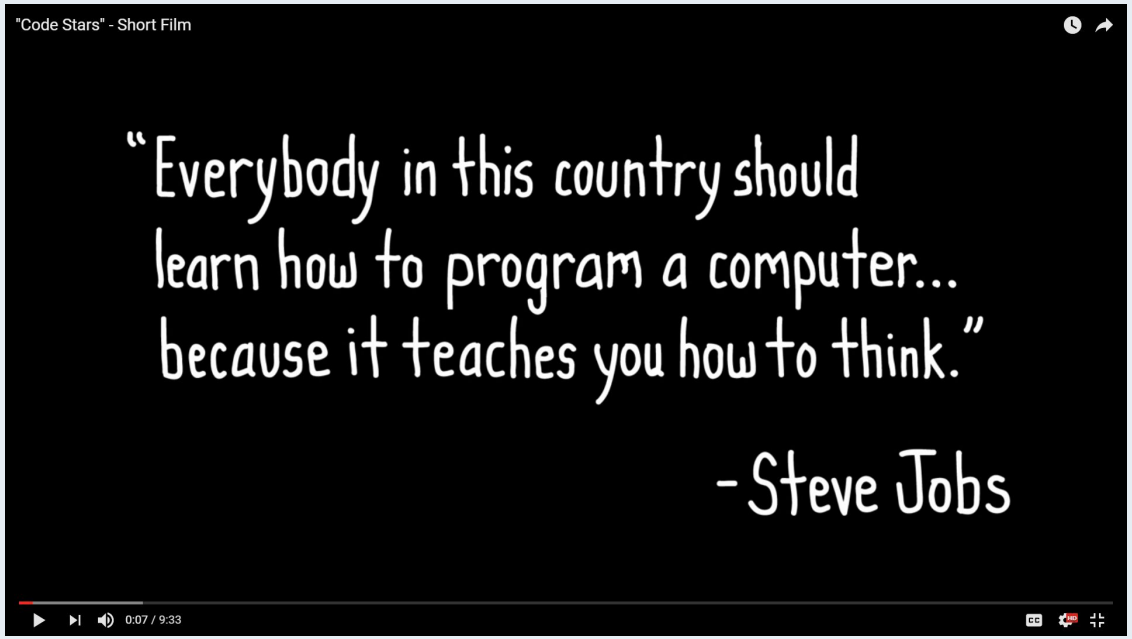
Hangout Meeting?

Live training?

Webinar (your topic)?

Monthly newsletter?

What would you like to see?



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We love to hear from you!

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