HELLO RUBY

Love Letters to Computers

Welcome to the adventure!

What is Computer Science? What does it try to understand about the world? And why is it important to become a computer science teacher in today's world? Through the prompts in this journal you can direct and document your learning as a computer science teacher.

The lesson reflections at the end of this journal offer you possibilities to recall, revisit and interpret your learning. You can fill the pages as you progress through the videos in order, or jump around.

Me as A Computer Science Teacher

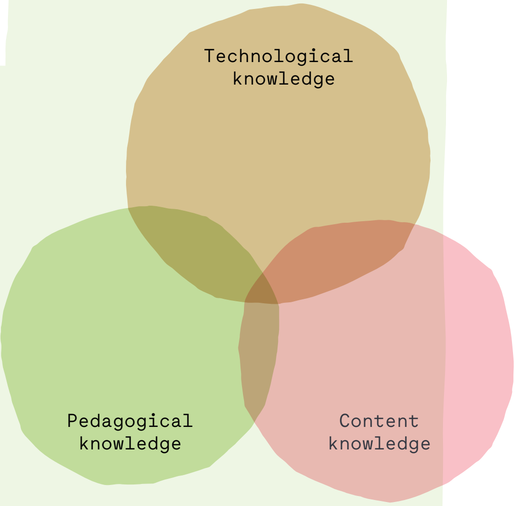
Fill

this page as you're beginning the series and keep filling it as you progress.

One area of computer science I'm curious about

Subject area I'm most excited about integrating with CS

My goal after this day as a computer science teacher is to



One magical childhood experience

School Assesment

Implementation Year

Grade Levels

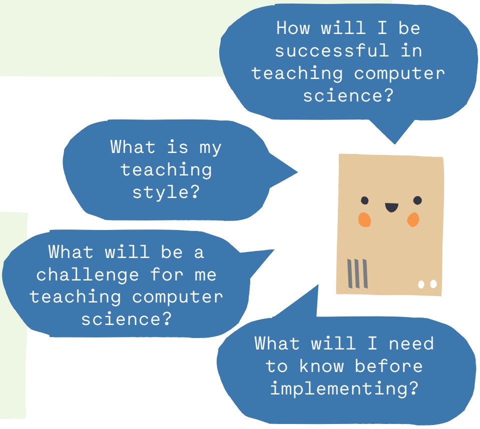
What resources are available for teaching computer science?

(E.g. books, laptops, tablets, robots, crafts materials..)

When will you be teaching computer science?
Who else will be teaching computer science in your school?

How could you engage parents, industry and other stakeholders?

Identify learning communities in computer science for on-going support


How will I be successful in teaching computer science?
What is my teaching style?
What will be a challenge for me teaching computer science?
What will I need to know before implementing?

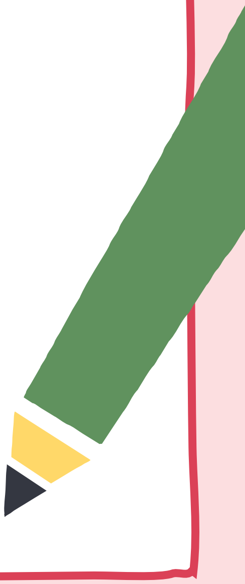
Session 1

My Love Letter to Computers

Write a letter for the principal, parents, local media or another important stakeholder on the importance of computer science education. Highlight what computer science is, why it's important, how and where you will begin integrating it and what kind of support you'd need.

Fill this page after watching the first video on Computer Science.

Dear__________________________,



Session 2

DEEP DIVE!

Choose one of the concepts or practices of computational thinking and explore more in-depth.

Sequence

Pattern recognition

Algorithms

Decomposition

What does it mean?

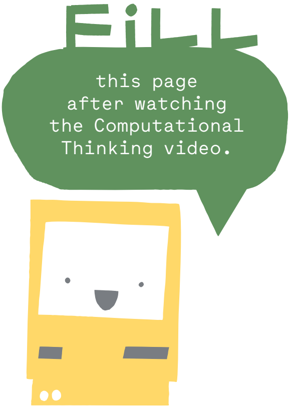
How it applies to your work?

How else you could you use it?

Explain the symbol used in the title

Make up an action/dance/poem/rap/song to represent the idea

Describe how the idea can influence your other subjects



Session 3

Get to Know A Curriculum

Get to know one coding program or curriculum better and reflect on how you might use it in your classroom.

Fill

after watching the third video on programming.

Curriculum Title

Provider

What prior knowledge will a teacher need?

What prior knowledge will a student need?

What student outcomes can be met with this course?

How long will this course take to implement?

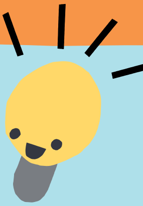
What about this course would be a success in your classroom?

What about this course would be a challenge in your classroom?

What equipment or resources would you need to implement this course?

What examples of sequence, selection and iteration did you find?

Who else is using this curriculum?



Out of ideas?

See helloruby.com/loveletters for a list of coding resources

Session 4

Making Computer Science Visible

Find a Computer Science quote that is interesting to you and copy it here

"To me programming is more than an important practical art. It is also a gigantic undertaking in the foundations of knowledge."
– Grace Hopper

"Computers are the bicycle for the mind"
– Steve Jobs

How could you make computer science visible in your classroom?

What kind of books could your classroom library include?

What about posters or bulletin boards?

Determine at least two ways to include your students work around the classroom

FILL

this page anytime, when inspiration hits, or after watching the fourth video on Data and Algorithms.

Session 5

Scratch

Try making a simple Scratch tutorial.

FILL

after completing a few Scratch projects.

Title

Overview

Steps

Can you describe a moment of joy or frustration?

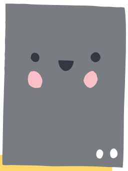
What motivated you in creating your project?

Project

Things to try out

Blocks needed

Tip



You can use Hello Ruby characters by going to helloruby.com/scratch or use the existing Scratch characters of the platform.

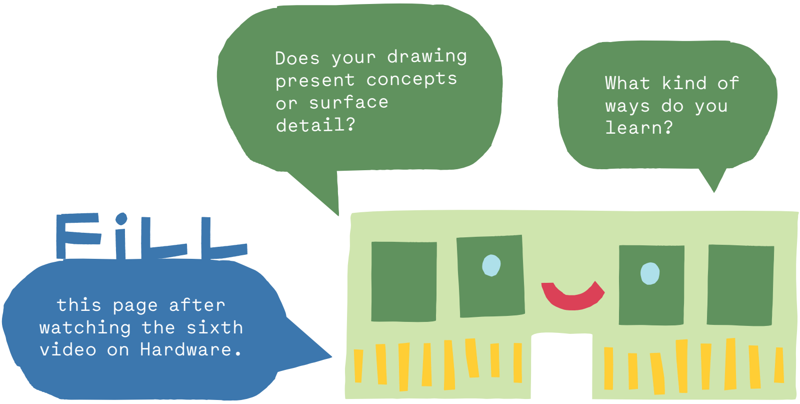
What helped you persist in face of challenges?

Assessment

Session 6

Mental Models

Draw what you imagine is inside a computer.
Then elaborate around this initial mental model.


Does your drawing present concepts or surface detail?
What kind of ways do you learn?
Fill
this page after watching the sixth video on Hardware.

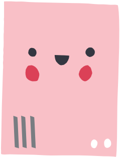
Session 7

OnE HuNdreD LaNguAgeS

FILL

this page after watching the seventh video on computer systems.

How could you use different mediums to explore ideas around computer science? Pick from the suggestions or choose your own and brainstorm. Use Memo space on next page.



	I/O systems	Hardware	Algorithm		
Paint					
Draw					
Write					
Sort					
Collage					
Paper					
Stickers					
Clay					
Play					
Dough					
Wire					
Sensory					
Technology					
Photography					
Build					
Act					
Puppets, Masks					
Sing					
Move					

Memo

Session 8

ASSEssmENt

How would you go about assessing students. Choose one activity you've completed and brainstorm different approaches.

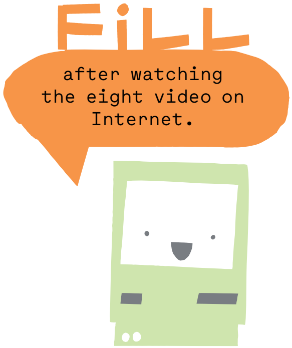
Reflection. What guiding questions could you offer for students to reflect their work? How about peer feedback?

Worksheets and quizzes.
How could you apply these in the context of computer science?

- Ask students to predict what a piece of code does. What happens next?
- Ask students to reverse engineer a project, and explain what kind of code might be used to make it.
- Ask students to remix or debug a project.

Rubrics and checklists. Can you make a rubric to support your teaching?

Portfolio. What kind of portfolio project could the students build?



Session 9

Computer Science Compass

North

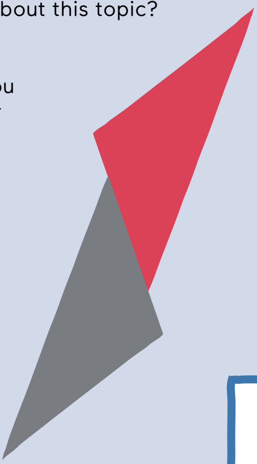
Needs.

What else do you need to find out about this topic?

West

Worries.

What worries you about computer science?



East

Excitement.

Which aspect of computer science are you particularly curious or excited about and why?

South

Stance, Steps, or Suggestions.

What should be your next steps? What suggestions do you have at this point?

Fill

after watching the ninth video on machine learning and AI.

Session 10

Myths in Computer Science

Read through the Myths in Computing Education. Which one do you agree with? Which one do you disagree with? Reach out to one or more peers and discuss together, online or offline. Then read through the original article by Mark Guzdial.

The lack of women in Computer Science is just like all the other STEM fields.

To get more women in CS, we need more female CS faculty.

Student evaluations are the best way to evaluate teaching.

Good teachers personalize education for students' learning styles.

A good CS teacher should model good software development practices because their job is to produce excellent software engineers.

Some people are just naturally better programmers than others.

"I used to think ____ but now I think ____ "

How can you introduce a more diverse idea of computer science in your classroom?

List three businesses, individuals or organisations you could invite for a classroom visit

WHAT DID I LEARN?

Do a final assessment of your skills. Choose the right emoji:

How did it Go?

○ I Can Do iT!

○ I Did it but didn't fully Get iT

○ I DidN't gEt it at ALL

I can explain what an algorithm is in the context of computer science.

○ ○ ○

I can give examples of algorithms met in everyday life.

○ ○ ○

I can explain that computers are controlled by sequences of precise instructions known as programs.

○ ○ ○

I can explain how computers use input, process and output to carry out useful tasks.

○ ○ ○

I can program a simple computer game using Scratch.

○ ○ ○

I can explain basic programming concepts to children (e.g., algorithms, loops, conditionals, functions).

○ ○ ○

I can plan out the logic for a computer program even if I don't know the specific programming language.

○ ○ ○

I know where to find the resources to help students learn to code.

○ ○ ○

I can find applications for coding that are relevant for students.

○ ○ ○

I can help students debug their code.

○ ○ ○

I can explain what a computer is and give examples of devices that include computers.

○ ○ ○

I can describe the key characteristics of basic computer architecture (eg CPU, memory, hard disk, mouse, display etc) .

○ ○ ○

I can explain in simple terms what a computer network is.

○ ○ ○

I can discuss social and ethical issues raised by the role of computers in the world.

○ ○ ○

I can suggest career paths for those studying Computing.

○ ○ ○

I have ideas on how to integrate computer science into my classroom.

○ ○ ○

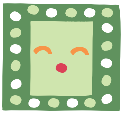
I can plan, create and assess creative computing curriculum.

○ ○ ○

New goal

My Computer Science Lesson Plan

BRAIN-STORM



Choose one practice and one concept you want to teach.

Examples:

Decomposition
Data
Pattern recognition
Algorithms
Hardware
Something else:

Examples:

Persistency
Debugging
Tinkering
Collaboration
Abstractions
Automation
Something else:

1 SENSE AND EXPERIENCE

Choose a learning activity that immerses students in the new concept.

2 RECORD AND RETAIN

Reflect on the experience, through discussing, writing and drawing, for example.

3 MANIPULATE AND EXPERIMENT

Create an experiment for the learners to run – this could be planned in advance or could grow out of the students' engagement with the earlier activity.

4 FRAME ACADEMICALLY OR TECHNICALLY

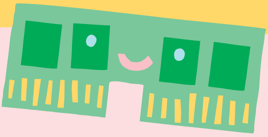
Now, students can deepen their knowledge of the subject through listening to or reading more technical academic texts. What resources will you use?

5 SYNTHESIS AND PRODUCE

All the previous learning experiences and knowledge gained are combined into a product with a clear recipient.

6 PREP TIME!

What materials, requirements or other preparation your lesson plan requires?



ASSESSMENT

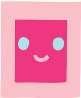
How do you check students understanding?

TEACHER CREATED

STUDENT CREATED

TEACHER ASSESSED

STUDENT ASSESSED



FEEDBACK

Ask from three other participants feedback on your project idea.

What is something that works well or you really like about the project?

What is something that is confusing or could be done differently?

What is something that doesn’t work or could be improved?

Computer Science: Lesson Reflection

Date

What went well?

What didn't go well?

How did the students respond?

Any special moments with students?

How could I Improve this lesson next time?

Was the objective met?

Why or why not?

Next steps

Computational Thinking: Lesson Reflection

Date

What went well?

What didn't go well?

How did the students respond?

Any special moments with students?

How could I Improve this lesson next time?

Was the objective met?

Why or why not?

Next steps

CODE: Lesson Reflection

Date

What went well?

What didn't go well?

How did the students respond?

Any special moments
with students?

How could I Improve this
lesson next time?

Was the objective met?

Why or why not?

Next steps

Data And Algorithms: Lesson Reflection

Date

What went well?

What didn’t go well?

How did the students respond?

Any special moments with students?

How could I Improve this lesson next time?

Was the objective met?
Why or why not?

Next steps

SCRATCH: LESSON REFLECTION

Date

What went well?

What didn’t go well?

How did the students respond?

Any special moments with students?

Was the objective met? Why or why not?

How could I Improve this lesson next time?

Next steps

Hardware: Lesson Reflection

Date

What went well?

What didn’t go well?

How did the students respond?

Any special moments
with students?

How could I Improve this
lesson next time?

Was the objective met?
Why or why not?

Next steps

Computer Systems: Lesson Reflection

Date

What went well?

What didn't go well?

How did the students respond?

Any special moments with students?

How could I Improve this lesson next time?

Was the objective met?

Why or why not?

Next steps

Computer Networks: Lesson Reflection

Date

What went well?

What didn’t go well?

How did the students respond?

Any special moments
with students?

How could I Improve this
lesson next time?

Was the objective met?

Why or why not?

Next steps

AI and Machine Learning: Lesson Reflection

Date

What went well?

What didn't go well?

How did the students respond?

Any special moments with students?

How could I Improve this lesson next time?

Was the objective met?

Why or why not?

Next steps

DivERSiTY And EquiTY: LeSSOn ReflECtioN

Date

What went well?

What didn’t go well?

How did the students respond?

Any special moments
with students?

How could I Improve this
lesson next time?

Was the objective met?

Why or why not?

Next steps

Year

What made me laugh

What made me proud

Year End Reflection

What made me cry

What I need to improve next year

Favorite moment

www.helloruby.com

Hello Ruby is the world's most whimsical way to learn about computers, programming, and technology.

This Journal Belongs To

School

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