ABC of Technology
Programmer
Illustrator
Author
Business school dropout

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If code is the new lingua franca, instead of grammar classes, we need poetry lessons.
Hi
Stories...

..help us make sense of the world.

..connect us to ourselves and to each other.
IT ALL STARTED WITH A KICKSTARTER CAMPAIGN

...WHICH REPRESENTED 20% OF ANNUAL BOOK EXPORTS OF ENTIRE COUNTRY OF FINLAND

..TODAY, FOUR BOOKS ABOUT CODING, COMPUTERS; INTERNET AND AI, PUBLISHED IN 25 LANGUAGES
Preparing kids for a world where so many problems are computer problems.
what did we learn?

1. Exact commands.
2. In the right order.
3. Naming things is important (and you can’t make spelling mistakes)
4. Instructions should cover all scenarios and be modifiable.
5. Even the biggest problems in the world are just tiny problems stuck together.
A is for algorithm
“In most mathematical lessons the whole difference lies in the fact that the student is asked to accept from outside an already entirely organised intellectual discipline which he may or may not understand.”
- Jean Piaget

“Don’t present students with pre-organised vocabulary and concepts, but rather provide students with a learning environment grounded in action.”
- Jean Piaget
BRUSH YOUR TEETH
... do we know what a toothbrush is?
.. what about the toothpaste?
.. remember to open the toothpaste?
.. remember to stop moving your hand towards the mouth!
.. defining clean
How many made a mistake?
How many asked for help?
Pair programming

The other one drives, the other one gives instructions.
1. Explain to three friends what you tried to do before asking teacher.
Creativity
This is called bubble sort algorithm.
Where is the algorithm?

What is the world’s best ice cream?

The World’s Best Ice Cream
Everyone says so, you should try it.

List of ice cream flavours
Wikipedia

Top 10 Places to Eat Ice Cream
Travel magazine

The 11 Best Summer Ice Cream Flavors Of 2016
Foodstore
Where is the algorithm?

Ruby - your rabbit needs more food! Order now.

Ruby - buy this wonderful dress, today!

What did we get for homework?

Try out the new, free Mousehunt game. It’s purrrfect!

I made a goaaaaaaaahh!!!

Since you like computers, you might also like this new tablet.
Where is the algorithm?
ABstractions of computing

Kinetic

Visual

Code

Practice

for i in 0..1
puts "Clap"
end

for i in 0..1
puts "Stomp"
end

for i in 0..1
puts "Clap"
end

puts "Jump"

A thermometer.

A game.

A website.
Computational thinking

Thinking about problems in a way that allows computers to solve them. Computational thinking is something people do, not computers. It includes logical thinking and the ability to recognize patterns, think with algorithms, decompose a problem, and abstract a problem.
B is for (boolean) logic
Computers are abstraction machines.
FETCH!
EXECUTE!
STORE!
Computers are abstraction machines.
My Magical Computer

1. This is what I made into a computer:

2. The name of my computer:

3. When I press the on/off button my computer will:

- Computers have sensors that can recognize changes in the environment. Color the sensors your computer has and describe what they do.
  - Orientation.
  - Temperature.
  - Vibration.
  - Moisture.
  - Internet.

My Magical Computer

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This is what I made into a computer:

You Are GREAT!
INPU
PROCESSING
OUTPUT

SEATBELT UNLOCKED!

WARN THE PASSENGER!
Notional machine

“An abstraction of the computer that one can use for thinking about what a computer can and will do.”
- Benedict DuBoulay

“We want students to understand what a computer can do, what a human can do, and why that’s different. To understand computing is to have a robust mental model of a notional machine.”
- Mark Guzdial

Computer is the same thing as Internet.

Computer is the same thing as machine.

Computer is the same thing as technology.

Computers have feelings.

Computers can sense things.

Computers have sensors.

Computers can make art.

Computers think.

Computer know about me.
C is for creativity
Seeing
Computer vision, Image recognition

Reasoning
Classification, clustering, regression

Creating
Computational Creativity

Communicating
Natural Language Understanding

Moving
Robotics and Autonomous vehicles

Machine Learning
<table>
<thead>
<tr>
<th>INPUT</th>
<th>OUTPUT</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Are there human faces (0 or 1)</td>
<td>Photo tagging</td>
</tr>
<tr>
<td>English sentence</td>
<td>French sentence</td>
<td>Translation</td>
</tr>
<tr>
<td>Car cameras</td>
<td>Position of other cars</td>
<td>Self-driving cars</td>
</tr>
<tr>
<td>Audioclip</td>
<td>Transcript of audio clip</td>
<td>Speech recognition</td>
</tr>
</tbody>
</table>

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Is this a cat?
Traditional programming

Rules

Data

Answers
Answers \rightarrow Data \rightarrow Machine Learning \rightarrow Rules
PROBLEM TO SOLVE
Is this a cat?

ANSWER THE QUESTION
GATHER DATA

Examples of cats
GATHER DATA
Examples of cats

BUILD A MODEL
BUILD A MODEL
GATHER DATA

Examples of cats

BUILD A MODEL
ANSWER THE QUESTION

Yes!

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**Problem to Solve**
Is this a cat?

**Gather Data**
Examples of cats

**Build a Model**

**Answer the Question**
Yes!

**Update Model**
What happens in a world where we don’t have the vocabulary to express what is around us?
Where's wikipedia.org?
Try 204.74.112.1!

Where's wikipedia.org?
Try 207.142.131.234

Wikipedia.org nameserver
204.142.131.234

Where's wikipedia.org?
It's at 91.198.174.192

Where's wikipedia.org?
Try 204.74.112.1

Root server
198.41.0.4

DNS server
.org nameserver
204.74.112.1

DNS server
Another computer

Wireless access points

Satellite Internet

Your computer

Fibre and undersea cables

Hardware

Software

Society
Technology is built on humanity.

Computer (km-pytr) n. person who makes calculations or computations; a calculator, a reckoner; spec. a person employed to make calculations in an observatory, in surveying.

Technology (from Greek τέχνη) Techne, "art, skill, cunning of hand"; and -λογία, -logia[1]. Techniques, skills and competencies alongside the tools needed to do the job. Agriculture is a technology; democracy is a technology.
Exercise 3

Explain!

What is technology? What is it used for? And who uses it?

Technology is electricity that moves. It is used to play. I use it to have a conversation with my mom, we use a WhatsApp application. People uses technology.
THANK YOU!

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7 days in 7 minutes

Get to know the routine of Mr. Vinicius...
Vinicius is one of 2 million Brazilian teachers

He is married and has two little girls, and, just like his Brazilian colleagues, earns a wage equal to $972 a month. To be able to pay the bills, he teaches in 3 different schools.

He has barely any spare time to support the development of his own daughters.

99% of Brazilian teachers earn less than R$3,500.
Saturday and Sunday

Vinicius starts the week by giving up some family time in order to select content that can add to his classes, to make them more dynamic.

A lack of interest and the disconnect between students and content is the main reason for Brazil being number 3 for high-school dropout among countries assessed by the UNDP.

Vinicius doesn’t want to lose a single student!
At 7 in the morning Vinicius was ready to start the first of five lessons the day.

At 7:20 he hadn’t managed to start teaching his content, as he had to check which students had done the homework.

In Brazil, 33% of teachers' time goes to bureaucratic activities.
Tuesday

Our teacher starts moving to the next chapter of his content when he realizes that half the class can't keep up with him.

He is forced to stop the lesson and review the content of previous chapters.

The half that had learned it is now inattentive and bored.
Vinicius starts the day thinking about the night he is about to face.

Today he has to prep different tests for all of his classes.

He knows it’s going to cost him 4 hours and is afraid he won’t get to tell his kids a bed-night story.
Thursday

After an intense morning of classes, the afternoon is booked up with meetings! The Professor leaves feeling quite frustrated.

The pedagogical coordinator is distant and can't see his work in order to bring relevant feedback.

With his colleagues, there is little interaction and exchange.

It seems like everyone is fighting their own lonely battles.
Another week comes to its end and Vinicius is exhausted. That's not even what he is most sad about. Vinicius became a teacher because of his love of teaching, but he goes home with the feeling that his students don't learn. In Brazil, only 10% of students graduate knowing the expected minimum in math. He is probably right.
And how could it be different?
Vinicius enjoys the weekend spending time with his family and friends. He goes to bed anxious about the following day: he wants to try something new with his students, supported by Geekie One - a solution that couples content with tools and methods that boost student’s learning.
The teacher uses **Geekie One** content to introduce the topic to his class.

He finishes each lesson on the day by having a little understanding evaluation: **students answer a few exercises on the same platform and, with the automatic correction tool, get to know the results straight away.**
With data at hand, the teacher starts the lesson by dividing his class into 3 station-rotation groups, a methodology he was trained for by Geekie One's pedagogical consultancy.

Vinicius is excited: he can address different needs in the same class!
Throughout the morning, Vinicius continues with the station-rotation methodology.

By the afternoon, Vinicius is already experimenting with another new feature from the platform: generating tests. With Geekie One, he can efficiently create and personalize evaluations.
On Thursdays there is the pedagogic meeting. And haven't things changed here as well!

Teachers are gathered using Geekie One's tools to identify opportunities for interdisciplinary work.

Vinicius loved his interaction with the pedagogy coordinator as well.

She was aware of his students development and brought valuable suggestions.
The teacher finishes the week excited! He feels he managed to have more time and information to work with each student’s particular needs.

Time to go home - his girls also need their father.

The end.
60% of the population under the age of 25
0-14 years: 41.51% (male 3,060,118/female 3,028,975)*

15-24 years: 20.33% (male 1,486,393/female 1,496,393)


**2015, Jangadoo, citizen led assessment
By grade 5, 63% of children can’t read and 78% can’t perform basic math skills.
Confidence, social skills, enhances creativity, overall cognitive development
Transforming how African children understand themselves and their contribution to development
Child Centered

Play

Global Thinking / Local Partners

Accessibility
Programme des Vacances

L'eau dans la ville de Dakar
26 AVRIL AU 6 MAI
de 11h à 17h
(près de l'Hôtel Océan)

- Découverte de l'eau et ses origines
- A quoi sert un canal ?
- Création de système de purification d'eau.
- Création de puits et de chasse d'eau
- Comment recycler l'eau.
- Découverte des circuits d'eau et des inondations.

5 000 fcfa la semaine/30 000 fcfa pour deux semaines
5 000 fcfa pour deux semaines (pour 2 enfants et +)
Frais d'inscription: 2500 fcfa

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Mathematical Reasoning Through Play: A Teacher’s Toolkit
Creative thinking, problem solving through play: African changemakers
THANK YOU