ICT

Reading List

Middle School

- **<u>Hello Ruby: adventures in coding</u>** - <u>Linda Liukas</u>. Linda is the author and illustrator of Hello Ruby, a series of children's picture books about the whimsical world of computers

- **<u>Once upon an algorithm</u>** - Martin Erwig, 2017. Erwig illustrates a series of concepts in computing with examples from daily life and familiar stories. Hansel and Gretel, for example, execute an algorithm to get home from the forest. The movie Groundhog Day illustrates the problem of unsolvability; Sherlock Holmes manipulates data structures when solving a crime; the magic in Harry Potter's world is understood through types and abstraction; and Indiana Jones demonstrates the complexity of searching. Along the way, Erwig also discusses representations and different ways to organize data; "intractable" problems; language, syntax, and ambiguity; control structures, loops, and the halting problem; different forms of recursion; and rules for finding errors in algorithms.This engaging book explains computation accessibly and shows its relevance to daily life.

- **<u>Lauren Ipsum</u>** - Carlos Bueno, 2011. The blurb says "Lauren Ipsum is a children's story about computer science. In 20 chapters she encounters dozens of ideas from timing attacks to algorithm design, the subtle power of names, and how to get a fair flip out of even the most unfair coin. Laurie is lost in Userland. She knows where she is, or where she's going, but maybe not at the same time. The only way out is through Jargon-infested swamps, gates guarded by perfect logic, and the perils of breakfast time at the Philosopher's Diner. With just her wits and the help of a lizard who thinks he's a dinosaur, Laurie has to find her own way home."

- **<u>Computational fairy tales</u>** - Jeremy Kubica, introduces dozens of aspects of computational design. Using analogies from fairy tales, Mr. Kubica inspires readers to take in each concept and then extend their learning on their own.

- **<u>Best Practices of Spell Design</u>** - Jeremy Kubica. A book set in the same world as Computational Fairy Tales and the story is every bit as good as the first book. Focussing this time on good programming practices - commenting, functions, … - the book introduces the ideas in the familiar fairytale style. Available as an ebook.

- **<u>Nine algorithms that changed the world</u>** - does just what it says on the tin.

- **<u>Hackers</u>** - <u>Stephen Levy</u> This is a very enjoyable book. I found it inspirational and learned a lot about the development of the home computer (amongst other things).

- **<u>Alan Turing: The Enigma</u>** - <u>Andrew Hodges</u> This is a great biography. A fascinating insight into the early history of computing.

- **<u>What the Dormouse Said</u>** - <u>John Markoff</u> It's an in depth look at the early history of human-computer interfaces, amongst other things.

- **<u>Algorithms Unplugged</u>** - Ed Vocking, 2011. "In this book we present some of the most beautiful algorithmic ideas in 41 articles written in colloquial, nontechnical language. Most of the articles arose out of an initiative among German-language universities to communicate the fascination of algorithms and computer science to high-school students. The book can be understood without any prior knowledge of algorithms and computing, and it will be an enlightening and fun read for students."

- **<u>Algorithmic Puzzles</u>** - Levitin & Levitin, 2011. Quite original, includes some of the most classic puzzles in Computer Science and contains special sections on problem-solving techniques.

- **<u>Code: The Hidden Language of Computer Hardware and Software</u>** - Charles Petzold, 2000. Petzold's epic journey from two ten-year old's communicating by torches, through logic and switches, to

microprocessors and operating systems. Or as Jeff Atwood <u>describes it</u> another love letter to the computer.

- **<u>Brown Dogs and Barbers</u> Beecher** - Karl (2014) Excellent, short, readable book that answers the question 'What's Computer Science all about?'

- **<u>Little Brother</u>** - Cory Doctorow, 2008. From the book's website: "Marcus, a.k.a "w1n5t0n", is only seventeen years old, but he figures he already knows how the system works–and how to work the system. Smart, fast, and wise to the ways of the networked world, he has no trouble outwitting his high school's intrusive but clumsy surveillance systems.".

Audio-Visual

Online courses

- Codecademy - HTML And CSS https://www.codecademy.com/catalog/language/html-css
- Codecademy - JavaScript https://www.codecademy.com/catalog/language/javascript
- W3Schools - HTML And CSS https://www.w3schools.com/html/default.asp
- W3Schools – JavaScript https://www.w3schools.com/js/default.asp
- W3Schools – PHP https://www.w3schools.com/PHP/DEfaULT.asP
- W3Schools – SQL https://www.w3schools.com/sql/default.asp

<u>Sixth Form</u>

Audio-Visual

Base$_{cs}$ https://player.fm/series/basecs-podcast
Introduction to Computer Science and Programming Using Python

An introduction to computer science as a tool to solve real-world analytical problems using Python 3.5. https://www.edx.org/course/introduction-to-computer-science-and-programming-7

Programming Throwdown
https://www.programmingthrowdown.com

Introduction to Computational Thinking and Data Science

6.00.2x is an introduction to using computation to understand real-world phenomena. https://www.edx.org/course/introduction-to-computational-thinking-and-data-4

CS50's Introduction to Computer Science

An introduction to the intellectual enterprises of computer science and the art of programming https://www.edx.org/course/cs50s-introduction-to-computer-science

CS50's Web Programming with Python and JavaScript
https://www.edx.org/course/cs50s-web-programming-with-python-and-javascript

CS50's Introduction to Game Development
https://www.edx.org/course/cs50s-introduction-to-game-development

Codecademy – Python https://www.codecademy.com/catalog/language/python
Codecademy - Java https://www.codecademy.com/catalog/language/java
Codecademy – SQL https://www.codecademy.com/catalog/language/sql
Codecademy – PHP https://www.codecademy.com/catalog/language/php