(Open) ER and Computation(al Thinking)

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OER - Your Endless Body of Knowledge

Dawn

Today there were born three kids …

What are their prosperities for the life?

We should make all the effort to help all of them to prosper!
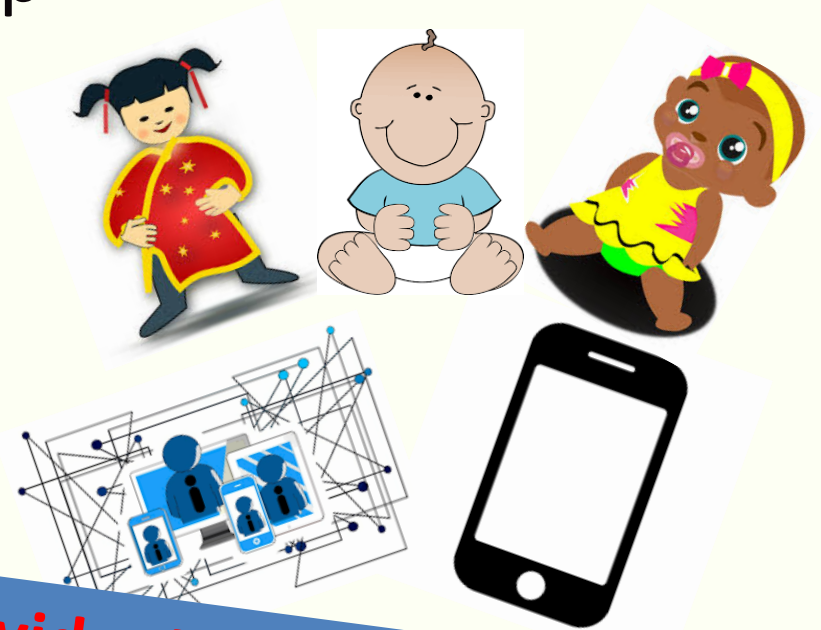
Future

The future will greatly employ ICT.

Consequently they will have to be familiar with ICT.

Great news

OER - Your Endless Body of Knowledge

digital native

a person born or brought up during the age of digital technology and so familiar with computers and the Internet from an early age.

www.dictionary.com

just provide the ICT to everybody

Not that great news

consume

a person o
commod
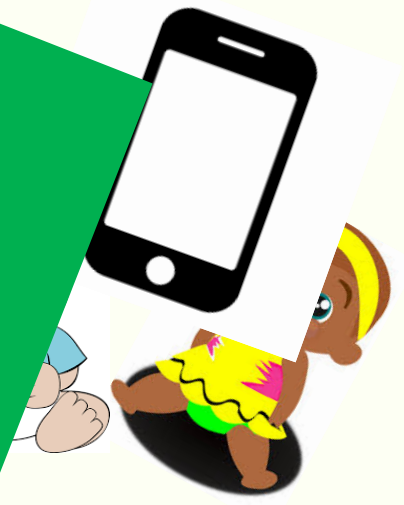
www.dict

creator - a person to cause to come into being, as something unique that would not naturally evolve or that is not made by ordinary processes.

- God

www.dictionary.com

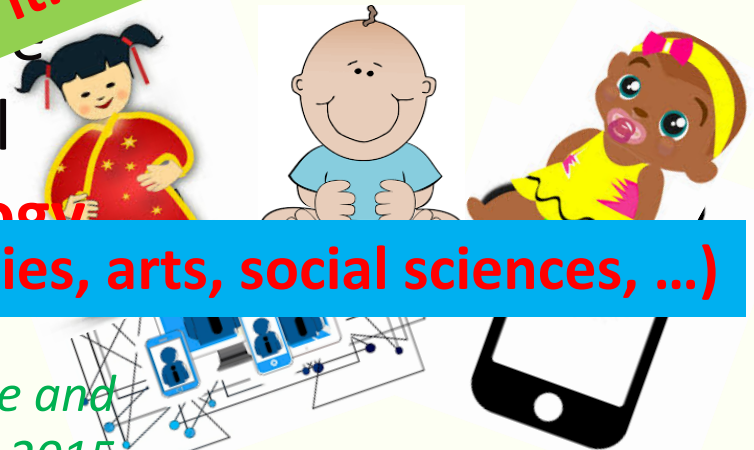# Creator vs. Consumer

OER - Your Endless Body of Knowledge

Develop a curriculum for teaching
Computing including Digital
Literacy and in particular C
Science/Informatics
children in K
an access to
make them *creators of technology*
– not just its consumers.

Children should be taught how to create a washing powder not only how to use it.

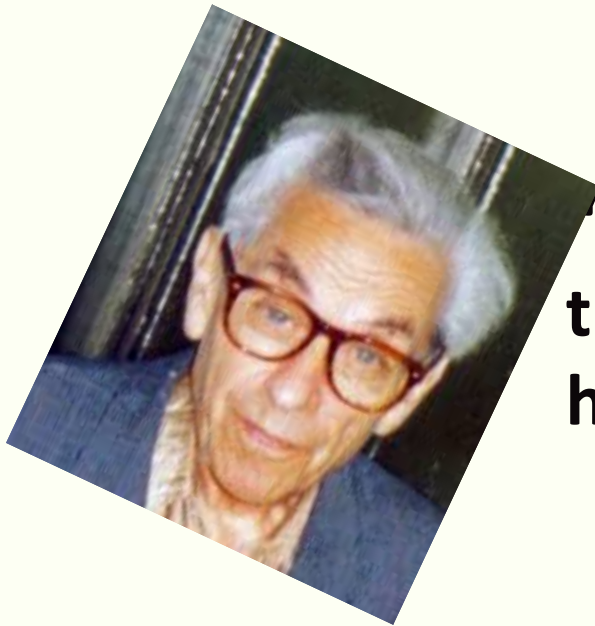**ICT creator, but any area (humanities, arts, social sciences, …)**

*Towards Knowledge Societies for Peace and
Susitainable development, UNESCO, 2015*

STEM/MINT and CS

OER - Your Endless Body of Knowledge

"This one's from the Book!"

(1913-1996)

Mathematics

Informatics

Natural Science

Technology

"I
th
have—POWER."

James Watt (1736-1819)

S,M   **CS**   **T,E**

Resources

Societies:

AC... **Girls**

Initatives:

...emy

...jo Girls

Mostly addressing programming / coding.

S,M   **CS**   **T,E**

- **CoderDojo**

- **Scratch**

- **...**

Computational Thinking

OER: Your Endless Body of Knowledge

- Several definitions

- Jannette M. Wing:

    Computational thinking is ~~the~~ ~~involved in formulati~~ ~~ng its~~ ~~solution(s) in a~~ ~~human or~~ ~~machine~~
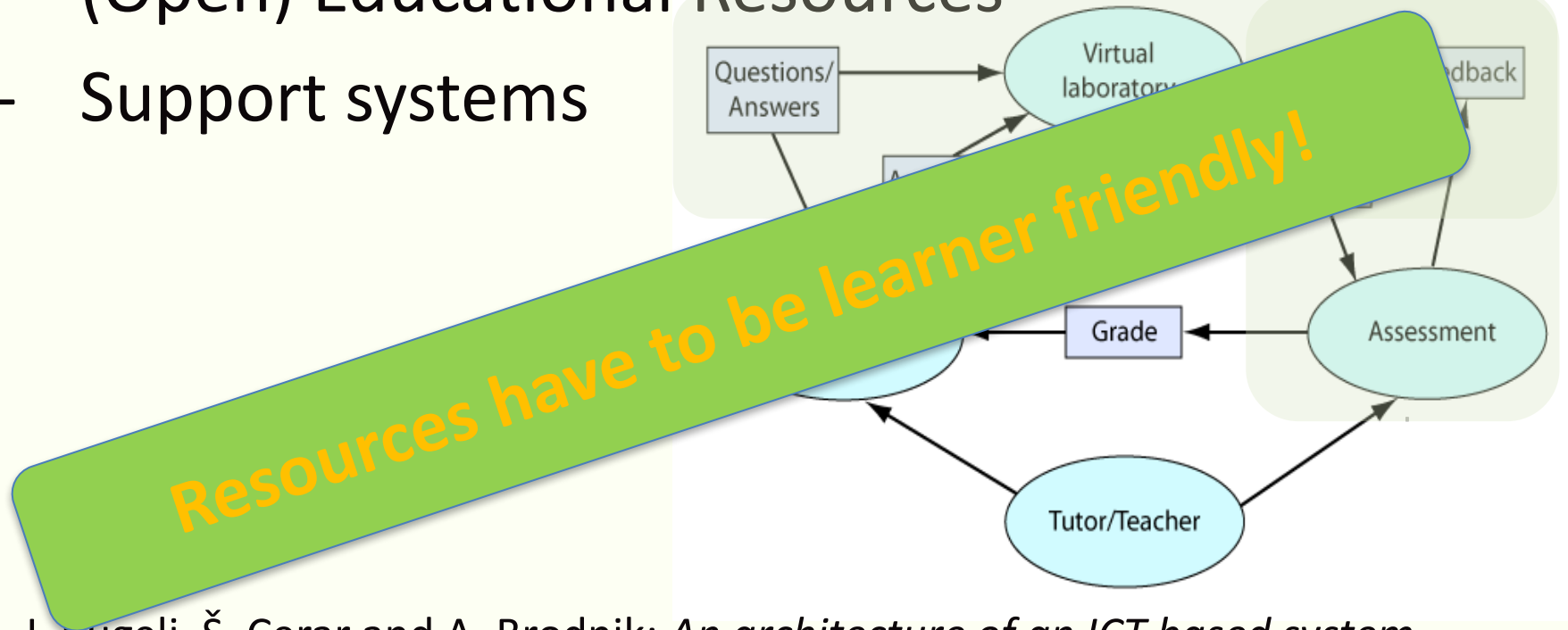
    Computational thinking ≠ Programming

    ~~Recomme~~nded reading: *Jeannette M. Wing, Computational Thinking, CACM, March 2006.*

Developing CT

We need:

- (Open) Educational Resources

- Support systems

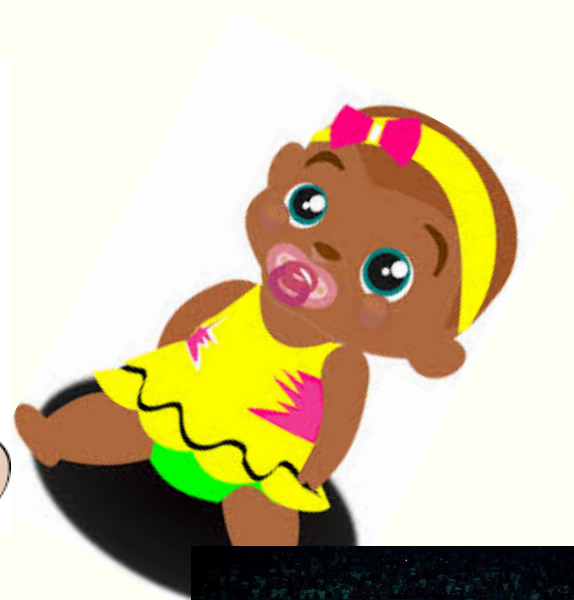**Resources have to be learner friendly!**

J. Rugelj, Š. Cerar and A. Brodnik: *An architecture of an ICT based system for constructivist based learning in higher education*, ICL2010

Challenges

1. *Technology:* develop support systems

2. *Friendliness:* make resources learner friendly

   1. Bebras (http://bebras.org/), ...

3. *Content:* CT OER

   1. ISTE (https://www.iste.org/explore/articledetail?articleid=152), CSTA (http://www.csteachers.org/page/CompThinking), CAS (https://barefootcas.org.uk/barefoot-primary-computing-resources/concepts/computational-thinking/), CT@Google (https://edu.google.com/resources/programs/exploring-computational-thinking/), Bebras, ...

4. *Curriculum:* ACM CSTA K12, IFIP, several countries

Provide complete K12 Computing education to every child to make her or his future brighter!

Hvala / Thank you!