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Soluzioni e tecnologie per la didattica e la multimedialità

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i-Theatre

Agenda

- Why a system for storytelling?
- A little bit of story (R&D)
- What is i-Theatre
- How it works
- Future vision and pedagogical research
- Summary

2007: the *idea* of i-Theatre

(mumble, mumble, mumble…)

Technology and *creativity*???

PLAYING

CHILDREN

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Tangible Bits: Towards Seamless Interfaces between People, Bits and Atoms

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ABSTRACT
This paper presents our vision of Human Computer Interaction (HCI): "Tangible Bits." Tangible Bits allows users to "grasp & manipulate" bits in the center of users' attention by coupling the bits with everyday physical objects and architectural surfaces. Tangible Bits also enables users to be aware of background bits at the periphery of human perception using ambient display media such as light, sound, airflow, and water movement in an augmented space. The goal of Tangible Bits is to bridge the gaps between both cyberspace and the physical environment, as well as the foreground and background of human activities.

This paper describes three key concepts of Tangible Bits: interactive surfaces; the coupling of bits with graspable physical objects; and ambient media for background awareness. We illustrate these concepts with three prototype systems – the metaDESK, transBOARD and ambientROOM – to identify underlying research issues.

Keywords
tangible user interface, ambient media, graspable user interface, augmented reality, ubiquitous computing, center and periphery, foreground and background

BITS & ATOMS
We live between two realms: our physical environment and cyberspace. Despite our dual citizenship, the absence of seamless couplings between these parallel existences leaves a great divide between the worlds of bits and atoms. At the present, we are torn between these parallel but disjoint spaces.

We are now almost constantly "wired" so that we can be here (physical space) and there (cyberspace) simultaneously [14]. Streams of bits leak out of cyberspace through a myriad of rectangular screens into the physical world as photon beams. However, the interactions between people and cyberspace are now largely confined to traditional GUI (Graphical User Interface)-based boxes sitting on desktops or laptops. The interactions with these GUIs are separated from the ordinary physical

Figure 1 Sketches made at Collection of Historical Scientific Instruments at Harvard University

"…world will be interface" (H.Ishii)

- Educational instrument for <u>storytelling</u>
- Activity cycle of <u>expression and reflection</u> (Piaget)
- <u>Collaborative learning environment</u> with digital support
- Support of digital tools (TUI) for <u>animation making</u>

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2009-2011: the system *development*
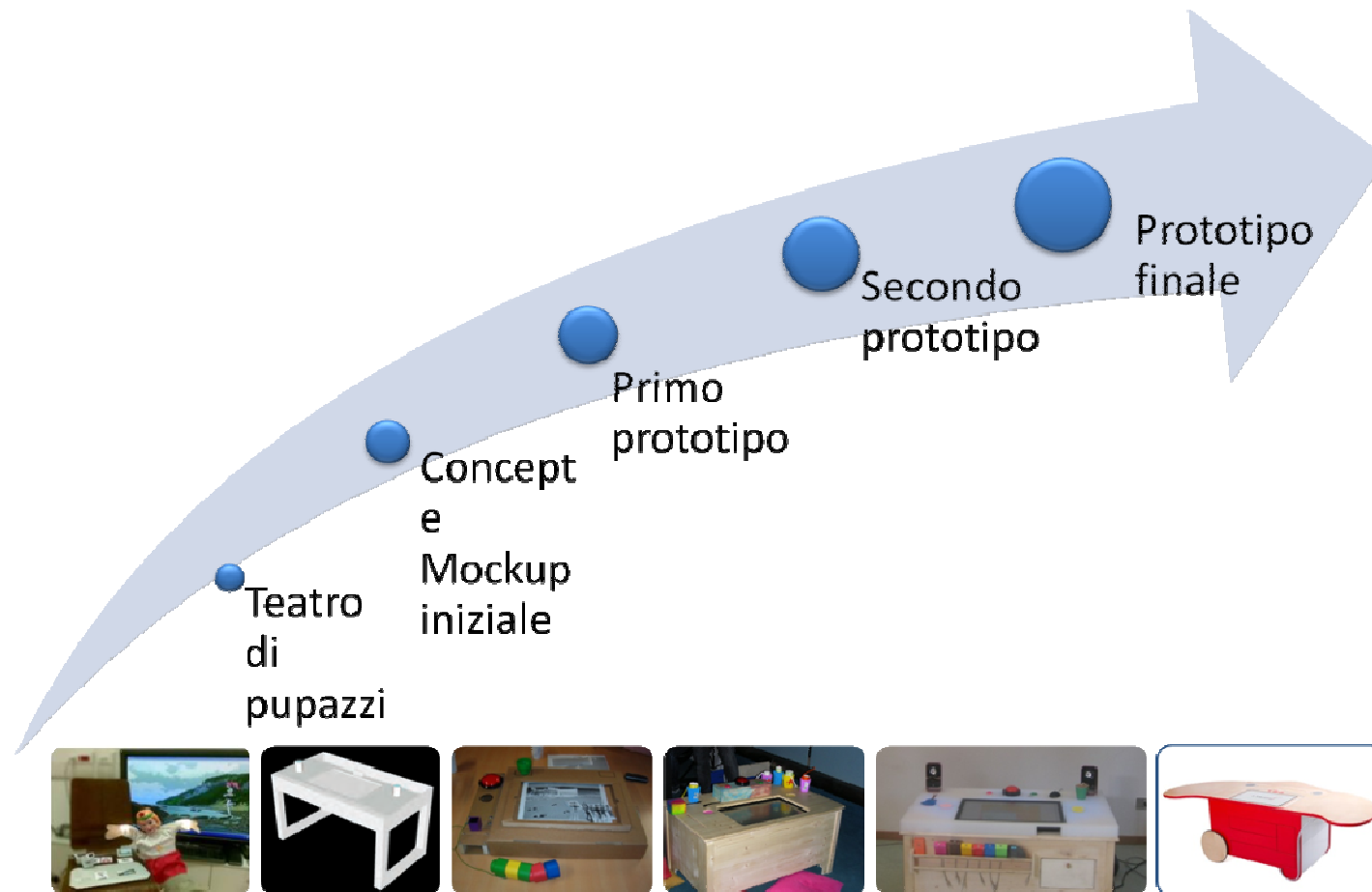
A matter of *identity*

Spring 2010 (early development):
no puppet interface, everything starts
from the drawings of children

Summer-Fall 2011
(late development):
the final design of
the instrument

Participatory design / First experimentations

April 2011 : kindergaden school in Trento (children of 5 years)

June 2011 : context of Natural Science Museum in Trento

--> August 2010 : visit in lab of prof. Marco Dallari

--> August 2011 : visit in lab with artist Gek Tessaro

An interesting meeting

Andersen journal, number of november 2010

Design is the physical representation of the idea

i-Theatre – In *transportable* shape…

Scanner-drawer

Protective panels

Handles for transport

Input/Output panel:
- power ON/OFF switch
- VGA output
- USB input/output

Storage drawer:
meant to store the objects of the tangible user interface + other objects used by children for creative elaborations

Drawer for modular panels:
contains 3 panels (side and back) to build the working surface in amphitheatre shape
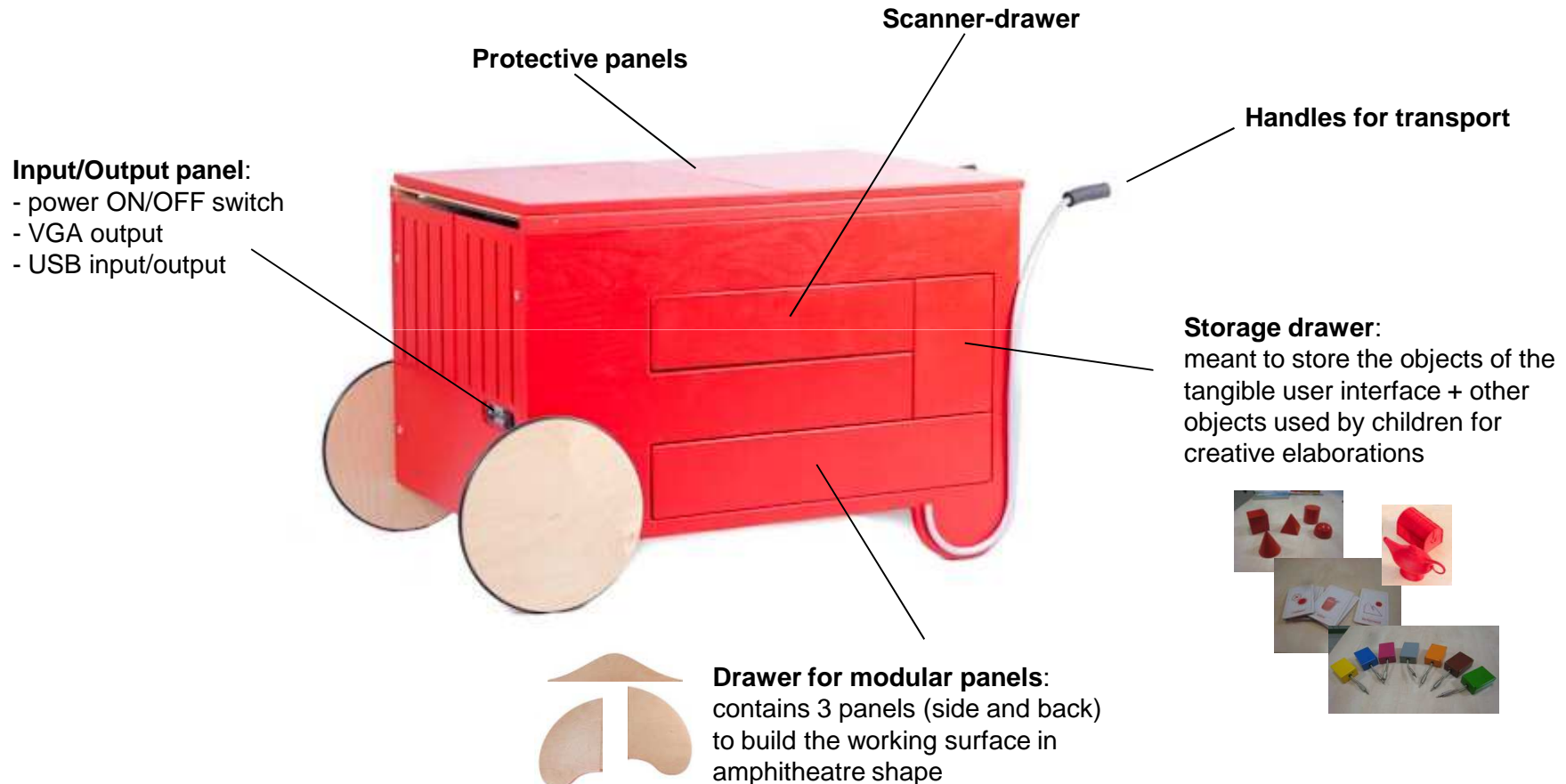
i-Theatre – ...and ready for *playworking*

Connection for scene cards

Lighting proscenium (LED): meant to highlight the different phases during the narration activity cycle

Button panel
- digitalize
- record
(+ microphone above)

Loudspekers

Working surface multitouch screen (capture up to 40 simultaneous touches), used to make and play the animated clips

Creation/elaboration surface Space for drawing, playing with materials, placing TUI objects, creative elaborations

Active areas (2): needed to interact with the instrument by using the objects of the tangible interface

i-Theatre – The *tangible interface*

Geometrical shape
(standard)

Children personal archive

Personalized shape
(3D print technique)

(i-Theatre at BETT 2012 expo)

Button panel

Acquire   Record   Acquire
character   a clip   background

Record and production system:
modular chain of recording
scene cards

1 card = 1 animated clip

Function cards:
needed to activate
particular functions of
work / management
(so far: delete, cut, paste,
background, configure,
Import/export)

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i-Theatre – How it works

1. Transport and prepare the setting (educator only)

2. Creation (with physical materials)

3. Preparation (digitalization)

4. Action (stage prep. + recording + editing)

5. Vision or export (educator only)

i-Theatre – Educational cues

Possibility of using materials suited for new creative elaborations

Possibility of using widescreen movie projection during / after the working session

Possibility to work on narration starting from quality illustrated books or DVD

Preliminary distinction between character and background

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Is the sea getting insane?

Educational goal: *media education*

→i-Theatre shows up to <u>EDUCATORS</u> as an instrument to develop creatively <u>NOVEL STRATEGIES</u> to provide pedagogical answers relevant and effective to the urgency and drammaticity of the problem of <u>DIGITAL NATIVES</u> and education to new media (<u>playing and experimenting togheter</u>, with media itself): to foster a <u>CULTURE OF AWARENESS AROUND MEDIA</u>

WHICH MODEL?

!!!

SCHOOLS
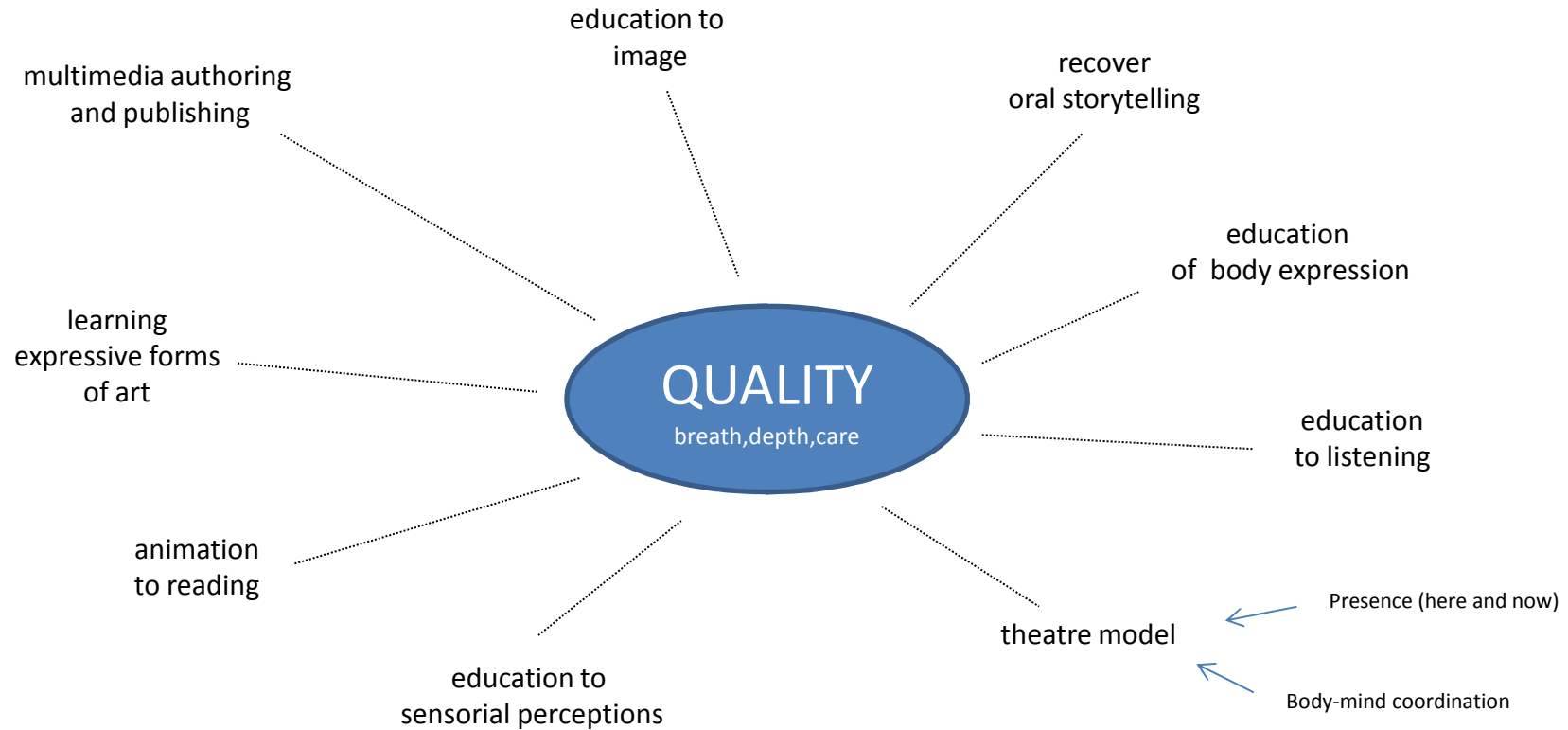
LIBRARIES

MUSEUMS

SPECIAL THERAPIES

PROBLEM

excess of stimulus-answer modality
habit to rapid-mechanical ways of interaction
habit to sthereotyped bad quality representations (image)
techonology often autoreferencial

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How? Just a word

education to
image

multimedia authoring
and publishing

recover
oral storytelling

learning
expressive forms
of art

education
of body expression

QUALITY
breath,depth,care

education
to listening

animation
to reading

Presence (here and now)

theatre model

Body-mind coordination

education to
sensorial perceptions

**SYMBOLIC
LIFE**

"Hope that multimedia could be the opportunity to grow and promote
an educational culture capable of going at the roots of human being and his spiritual needs,
not only the material ones"

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A glance into the future
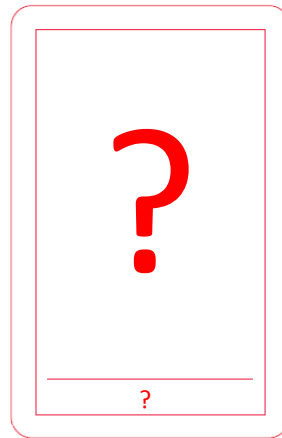
TO ENRICH FURTHER THE INSTRUMENT:

❖ editing of music / soundtrack / audio effects
❖ using animation pivots to make complex movement of characters
❖ use / reuse of stored clips in the story creation process
❖ tool to extract the storyboard starting from the movie (selection of key frames and possible way back to the paper version of the story)
❖ possible creation of multimedia narrations by elder artists

To summarize (1)

- New educational product fully designed and dedicated to conceive/build/reflect upon narrative horizon using multimedia resources

- Target user: children 4-10 years old; teachers, operators of the educational field

- Target environments: schools (kindergarden, primary school), libraries, educational section of museums and art galleries, special therapies institutions

- Pedagogical research and experimentation: important in parallel with appearence on the market

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To summarize (2)

- Combination of traditional artistic creation and forms (drawing, collage, patchwork) with digital tools (assembling animation) for story creation

- Intuitive easy-to-use movie making and editing

- Physical design combining in the same object natural materials and technology support

- Tangible user interface + touchscreen multitouch to interact with the system

Pedagogical advantages

- ✓ Fully creative, combination physical activity / mediated with digital support

- ✓ Work on storytelling (expression / reflection)

- ✓ Intuitive, avoid abstraction of common SW tools

- ✓ Different levels and possibilities of use

- ✓ Foster collaborative *playwork* (but also single user)

➡ metacognition on using media (narrative m.)

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Thanks for your attention!

Aknowledgements :

Life and reading

in society

through the mind's eye, the soul

LIFE

READING

in relationship

silent, intimate
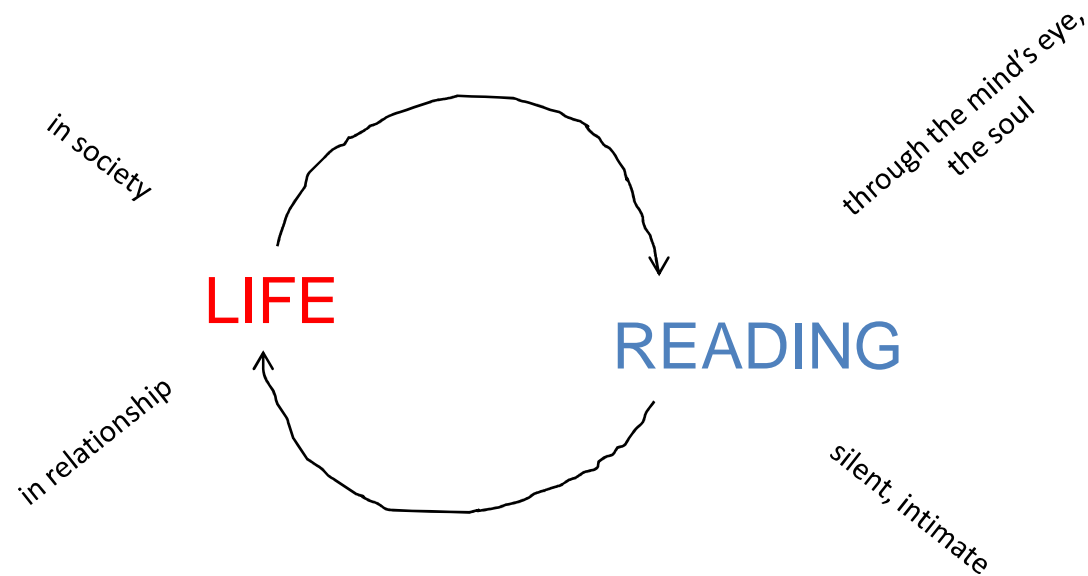
it is also RYTHM of…inspiration/espiration, expression/observation, speaking/listening…MOVEMENT

Which man for which future?

- free, creative human beings or good customers and media consumers?
- scared and frightened man or individuals capable of trusting the life mystery, feeling and playing?
- man capable of perceiving and communicating their emotions and feelings or people ever uncouncious and immature?
- people capable of following the answers of their inner own nature (active imagination) or castaway in a world of ideas far from real life?

For RESPONSIBLE adults it is the moment of
1) experiment, understand
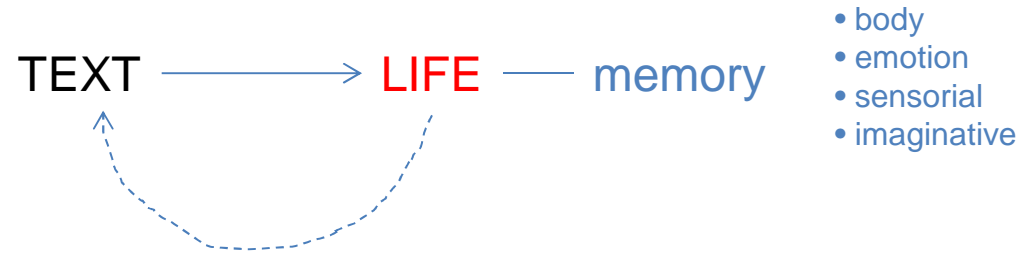2) undertake intelligent and passionate choices

"Not because we are all artists, but to set every one free"
"Children, learn to do difficult things: speak to the deaf, show a rose to the blind, set free the slaves who think they're free" (G.Rodari)

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Problem of mechanical learning

TEXT ⟶ LIFE — memory
- body
- emotion
- sensorial
- imaginative

→About: why we need art, storytelling, animation to reading, expressive forms and techniques (silent reading is not enough)

TEXT ⟶ memory   Typical "school learning"

- only signs, codex without life (=sense)
no affective engagement (no "studeo")
- expression comes out mechanical, there is no pathos and I can't invent it

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