

The Missing T & E in Early Childhood STEM: Young Children as Programmers and Engineers

Marina Umaschi Bers, Ph.D.

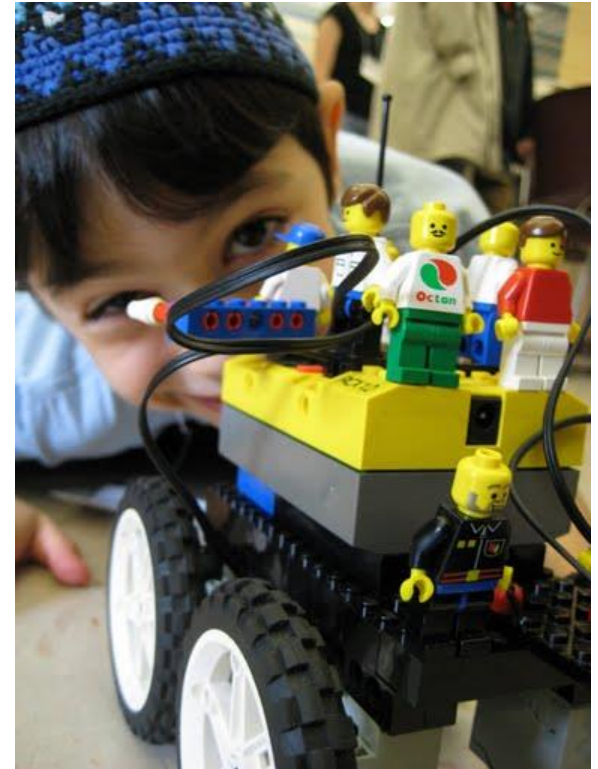
Professor, Child Development & Computer Sciences
Director, DevTech Research Group
Tufts University
marina.bers@tufts.edu

Amanda Sullivan, M.A.

Doctoral Candidate, DevTech Research Group
Tufts University
Amanda.sullivan@tufts.edu

Amanda Strawhacker, M.A.

Research Scientist, DevTech Research Group
Tufts University
Amanda.strawhacker@tufts.edu



Two scenarios for playful learning

Playpens



Playgrounds

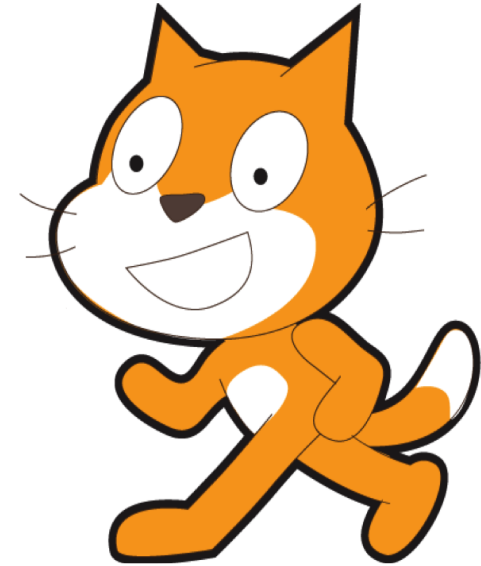
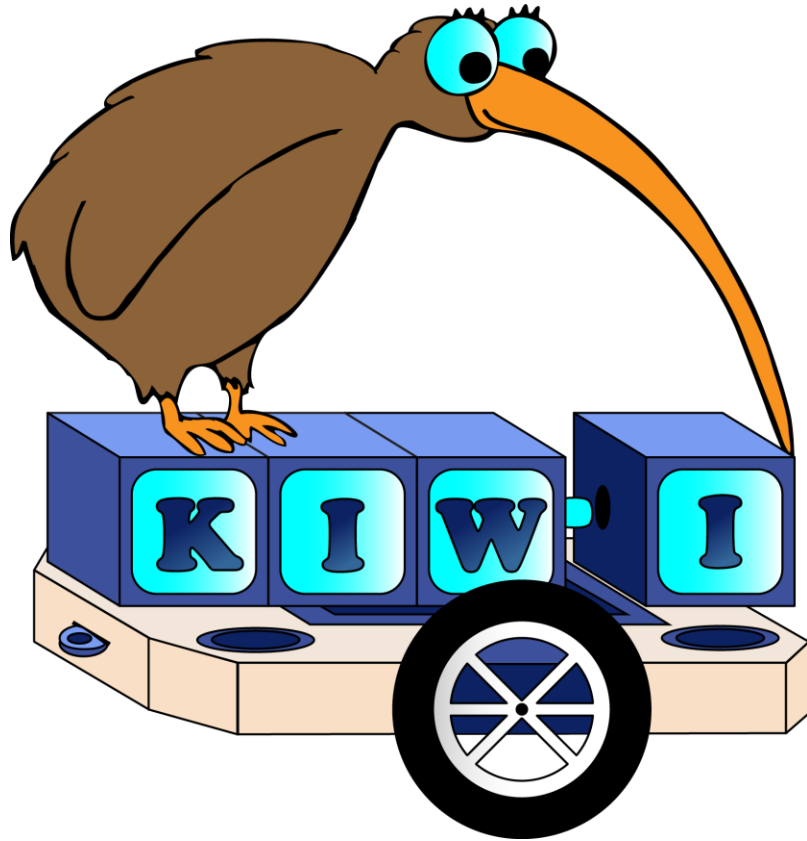


What is the connection with technology
and children?

Many technologies are digital playpens



There are also technological playgrounds ...



SCRATCH Jr

Playground technologies engage children as:

Producers vs. Consumers

Creators

Designers

Researchers

Movie makers

Programmers

Engineers

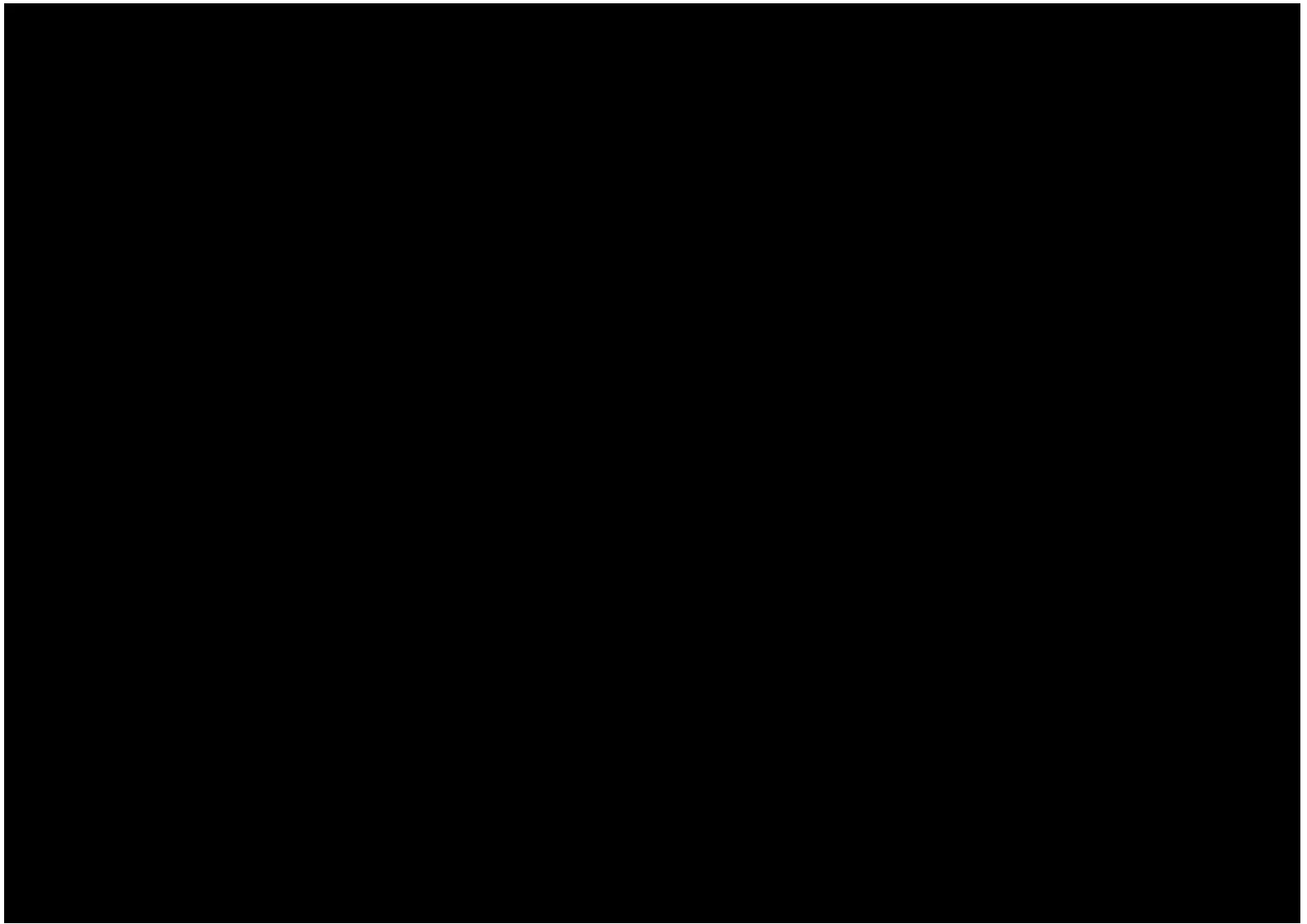
Problem solvers

Communicators

Robotics



CHERP and KIWI



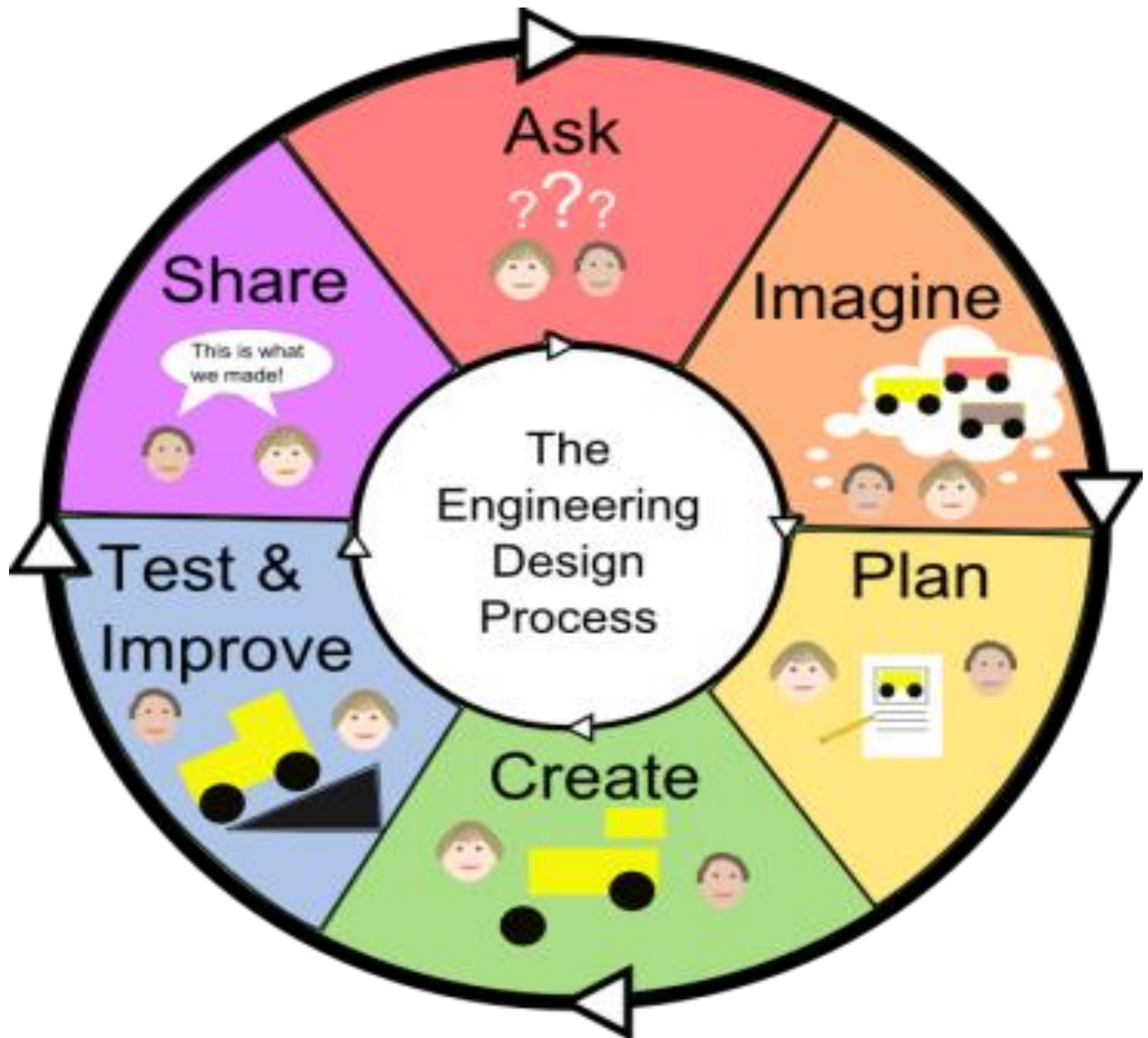


Let's make a robot dance the hokey pokey!

The Tangible Kindergarten Curriculum

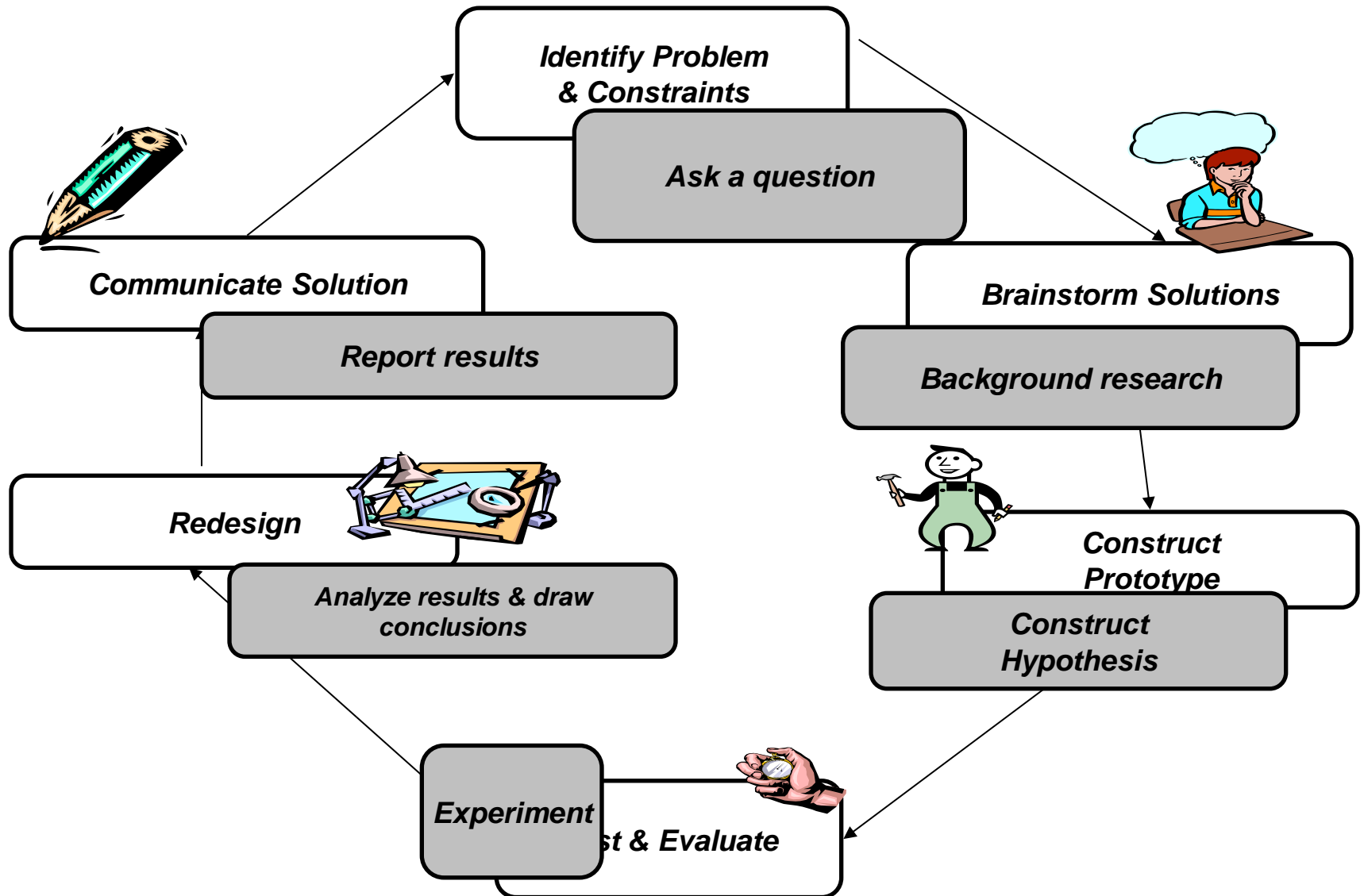
The engineering design process
(Building)

Computational thinking
(Programming)



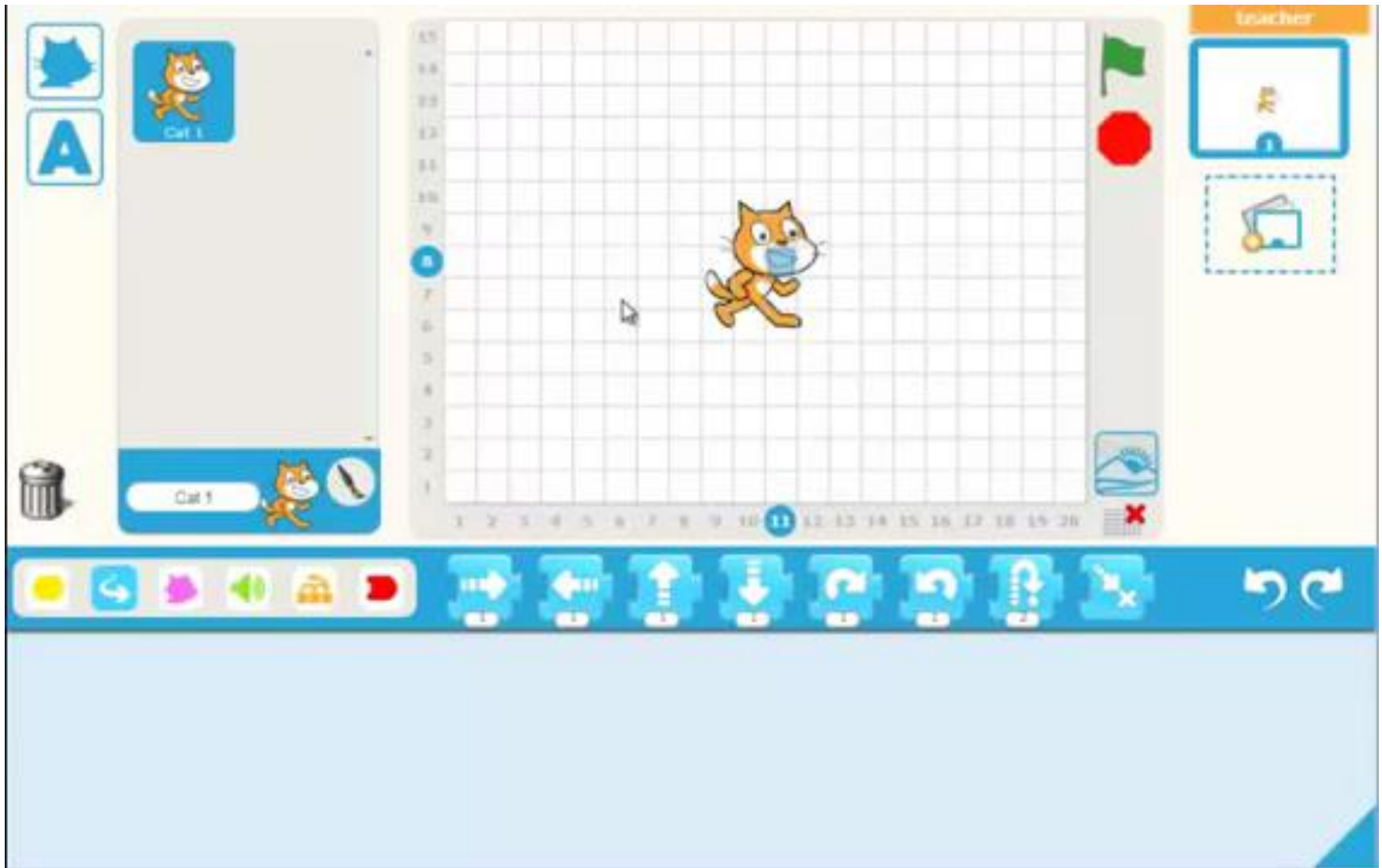
The engineering design process

The scientific method





Scratch Jr.



The image shows a Scratch programming environment with a video call overlay. The video call in the top-left corner shows a young boy with dark hair, looking down. The main workspace features a white grid with a blue and orange cat sprite in the center. A red circle in the top-right corner indicates a video call is active. The bottom interface includes a toolbar with various icons and a script area containing three blue 'move 1 step right' blocks, each preceded by an orange 'when green flag clicked' block.

Let's experience ScratchJr. now!



**DESIGNING DIGITAL
EXPERIENCES FOR
POSITIVE YOUTH
DEVELOPMENT**

FROM PLAYPEN TO PLAYGROUND

MARINA UMASCHI BERS

OXFORD

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**BLOCKS
TO
ROBOTS**

**LEARNING
WITH
TECHNOLOGY
IN THE EARLY
CHILDHOOD
CLASSROOM**



Marina Umaschi Bers
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More info?

<http://www.tufts.edu/~mbers01/>

marina.bers@tufts.edu



www.aaas.org

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