



# When Old Theories Meet New Media

**How Lessons from Child Development Can Guide Modern Parents**

Warren Buckleitner, Ph.D.

[www.childrenstech.com](http://www.childrenstech.com)





# The dream panel What would they say?

**Lev Vygotsky**  
(1896-1934)



**Jean Piaget**  
(1896-1980)



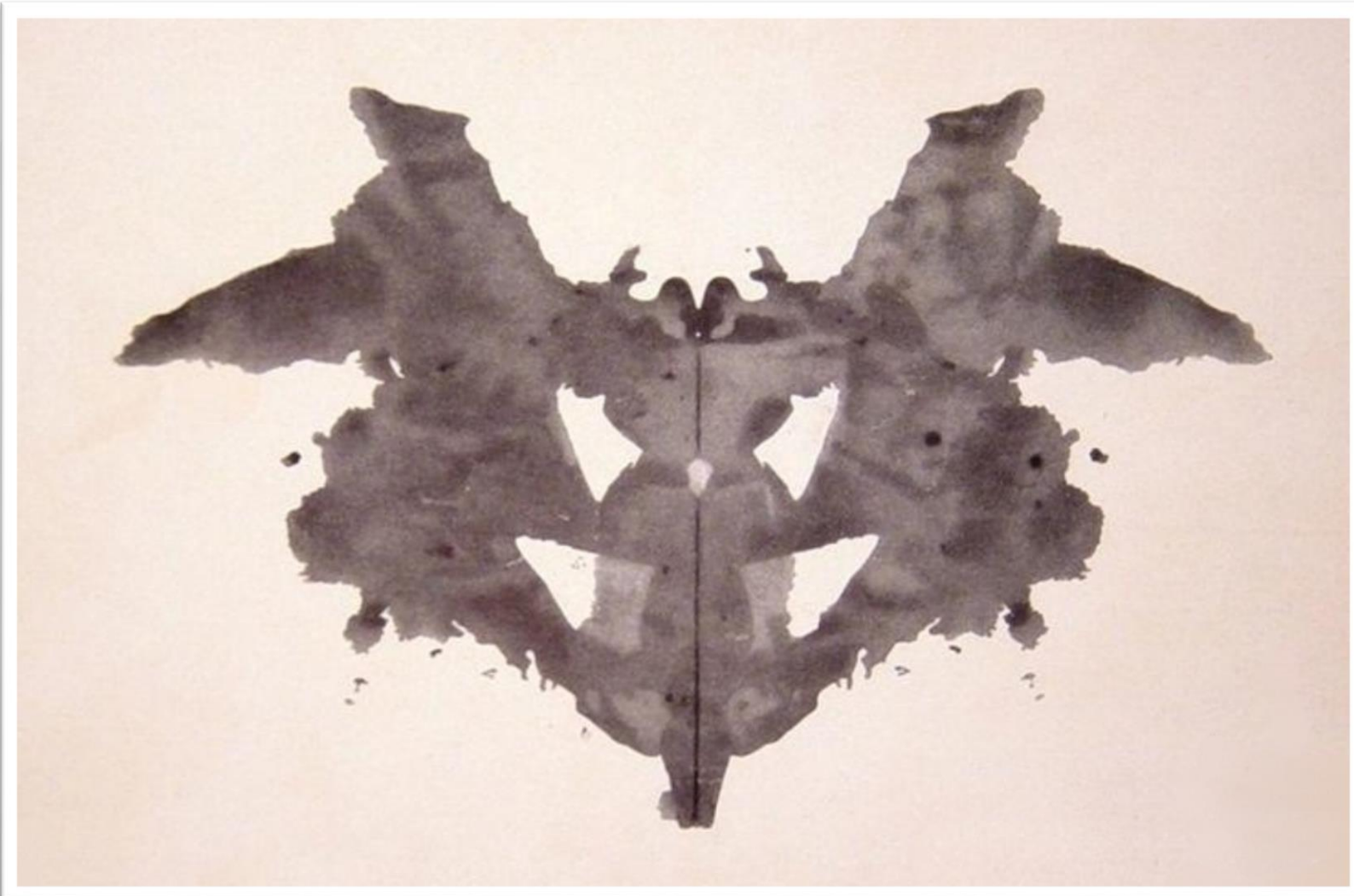
**BF Skinner**  
(1904-1990)



**Maria Montessori** (1870-1952)







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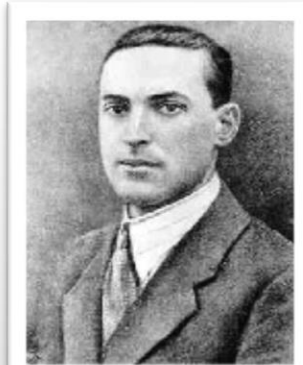
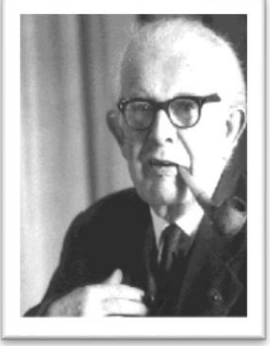


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## What Would Maria Montessori Say? Exploring Theoretical Frameworks for Children's Interactive Media



<https://youtu.be/F6qMTy6fhIM>





## Interactive Designer's Cookbook

Tasty stuff every interactive designer needs.

Jean Piaget: Equilibration

Jean Piaget: Stage Theory

Howard Gardner: Multiple Intelligence Theory

BF Skinner: Operant Conditioning

Ivan Pavlov: Stimulus Response

Lev Vygotsky: Zone of Proximal Development

Mark Lepper: Intrinsic Motivation

Mihaly Csikszentmihalyi: Flow

Abraham Maslow: Needs

Jerome Bruner: Learning & Language

Seymour Papert: Constructionism and the Four Ps

Maria Montessori: Virtual Manipulatives

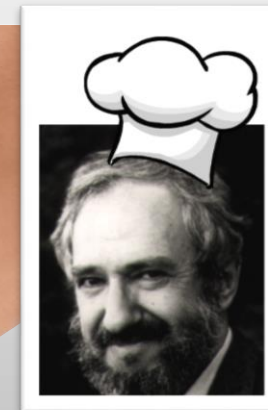
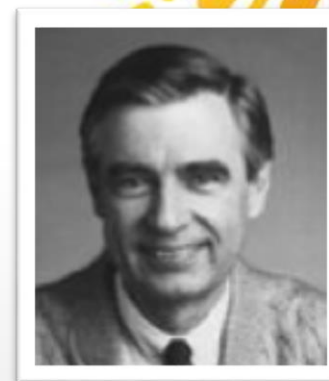
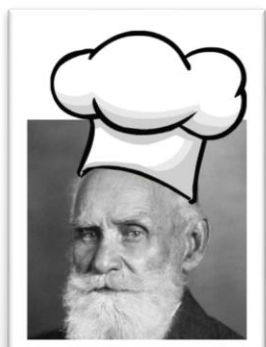
Natasha Dow Schüll: Addiction

Fred Rogers: Relationships

Medium Link → [The Interactive Designers Cookbook](#)

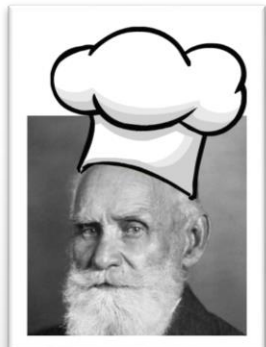








Dow Schüll



Pavlov



Vygotzsky



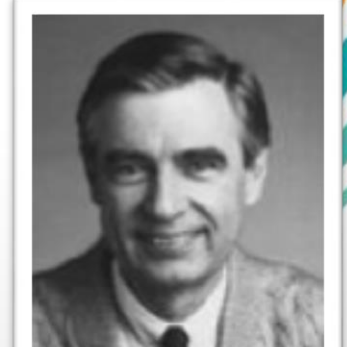
Csikszentmihalyi



Lepper



Gardner



Rogers



Skinner



Maslow



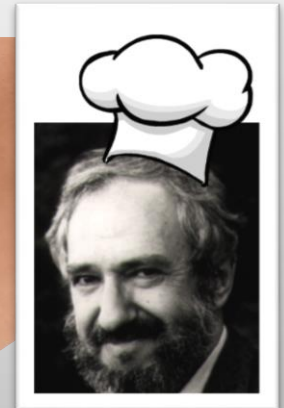
Bruner



Montessori



Piaget



Papert

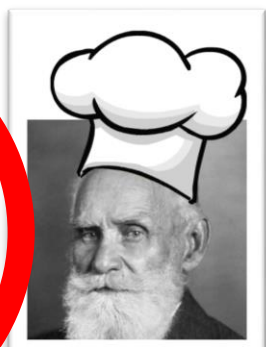


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Dow Schüll



Pavlov



Vygotsky



Mikszentmihályi



Lepper



Gardner



Rogers



Skinner



Maslow



Bruner



Montessori



Piaget



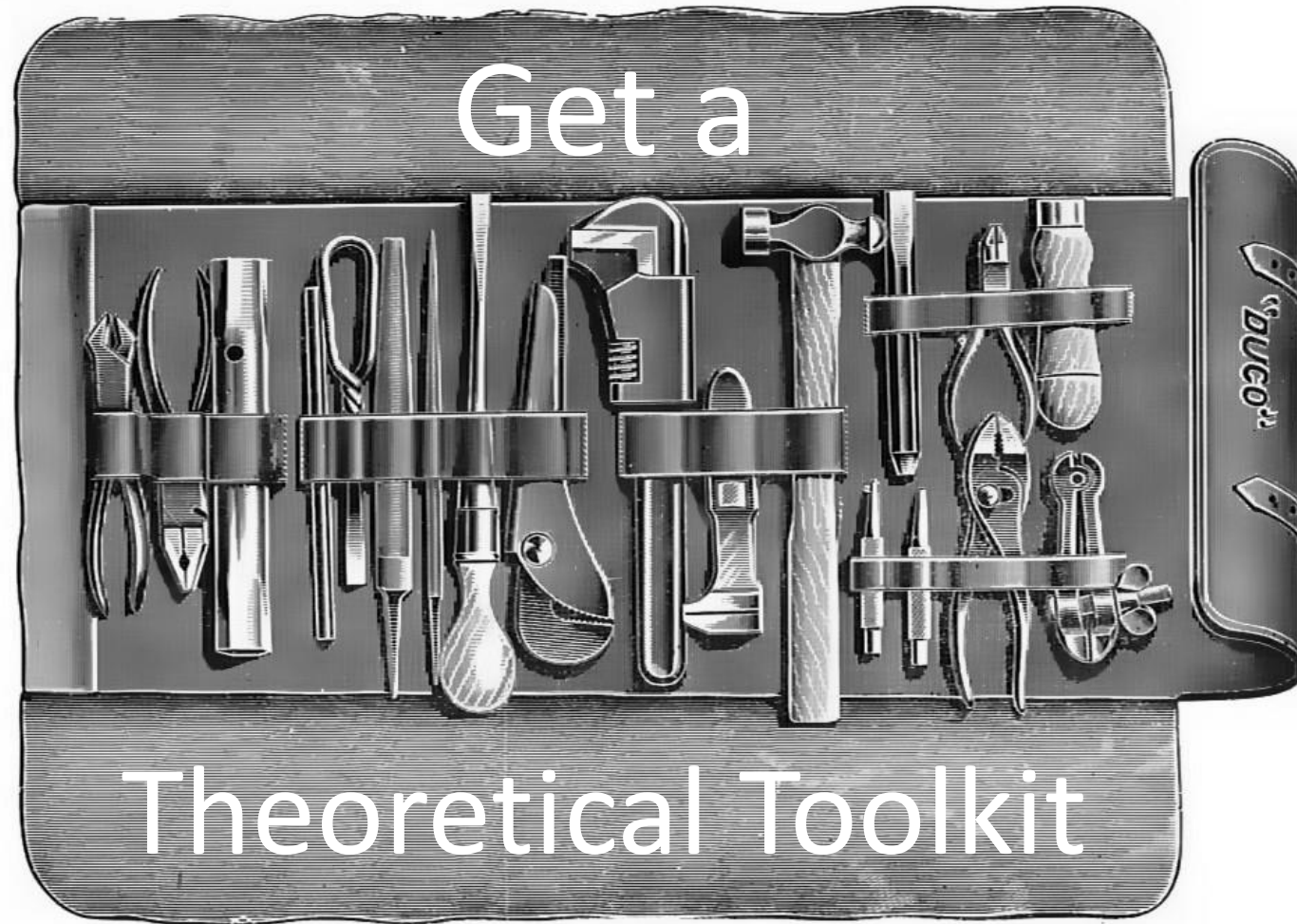
Papert



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Get a



Theoretical Toolkit

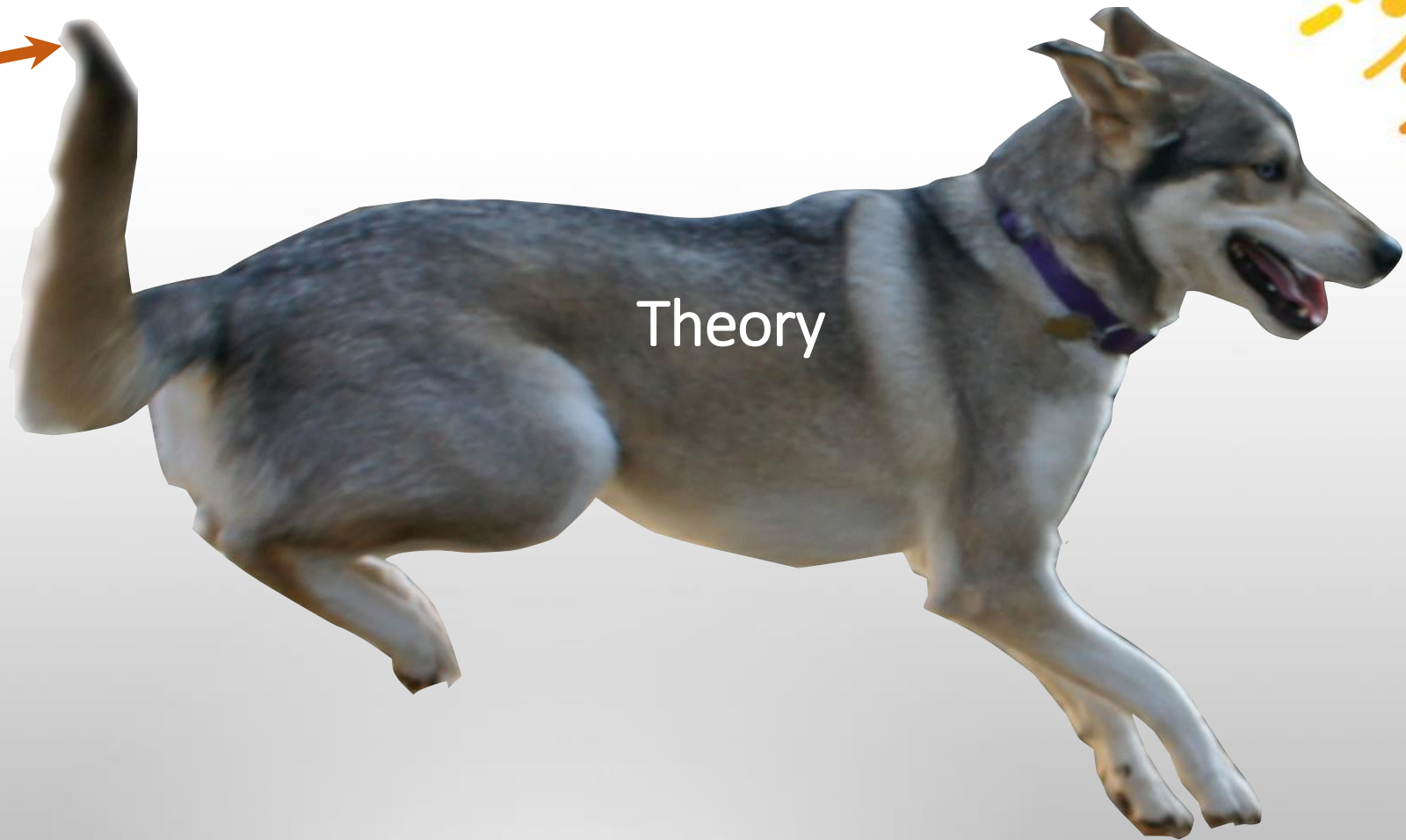


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Media



Theory



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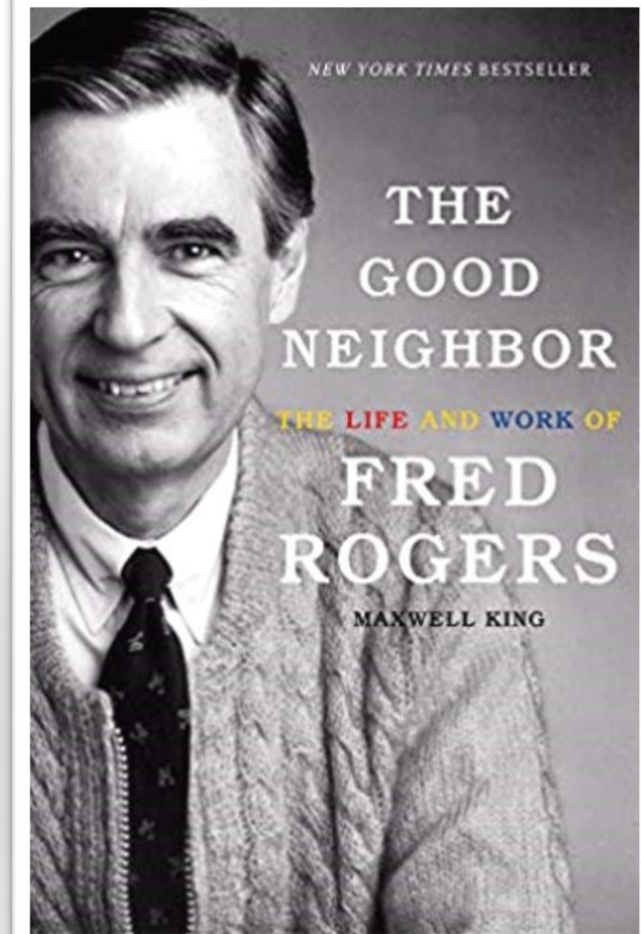
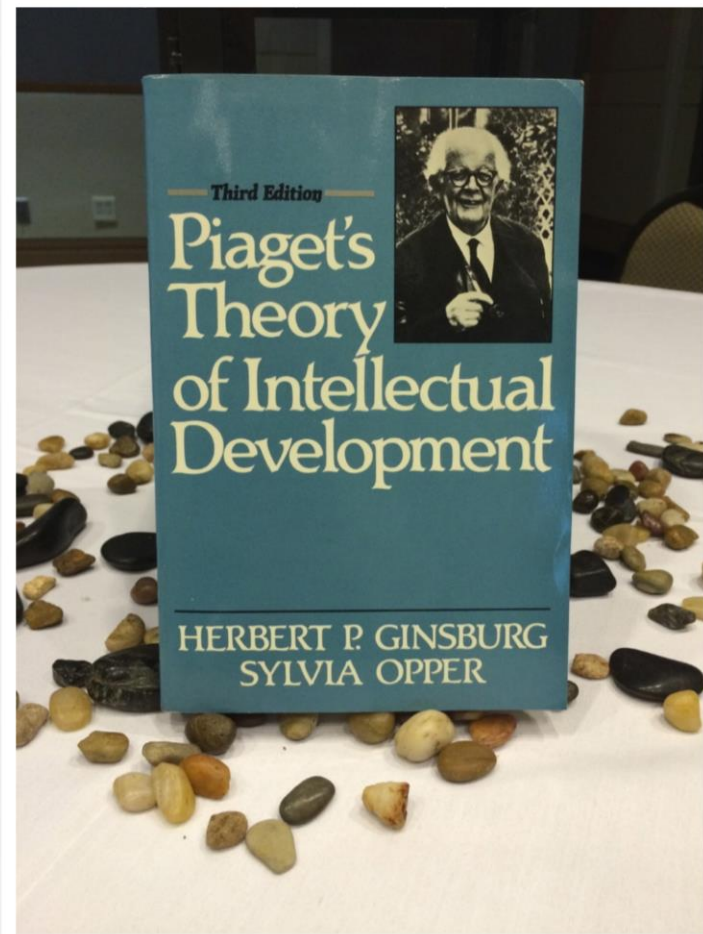


Search: Interactive Designer Cookbook



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DR. MONTESSORI GIVING A LESSON IN TOUCHING GEOMETRICAL INSETS

THE  
**MONTESSORI METHOD**

SCIENTIFIC PEDAGOGY AS APPLIED TO CHILD  
EDUCATION IN "THE CHILDREN'S HOUSES"  
WITH ADDITIONS AND REVISIONS  
BY THE AUTHOR



**WIKIPEDIA**  
The Free Encyclopedia

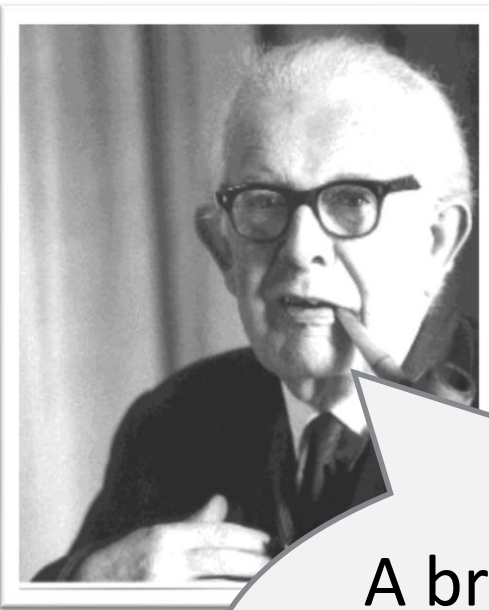


Search terms: "Montessori Method"



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Jean **Piaget**  
(1896-1980)



I like multi-touch, and apps that freely let children try ideas on for size.  
“Virtual manipulatives” should be studied.

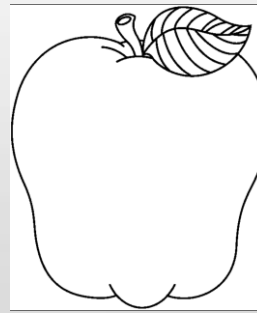
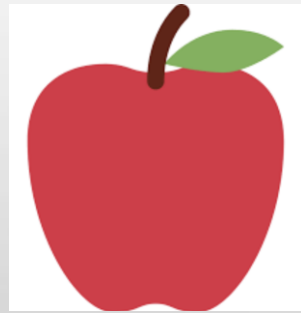
A bridge between concrete and abstract. You can play with your own thinking...



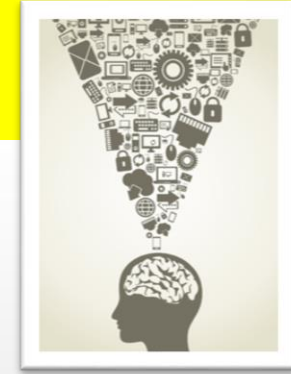


# How does knowledge get inside your head?

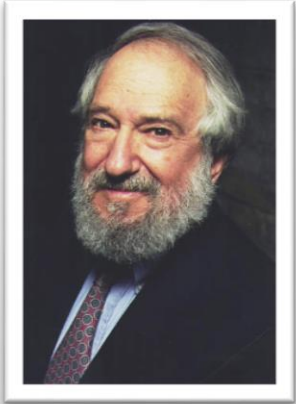
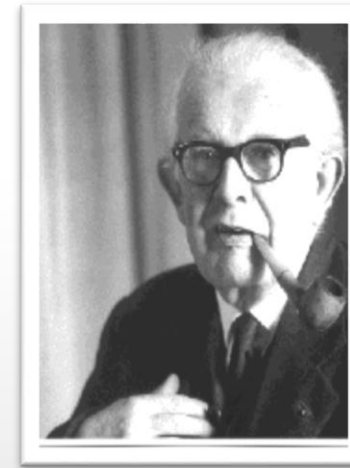
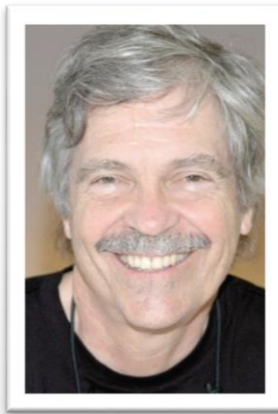
From concrete to abstract and symbolic



Apple



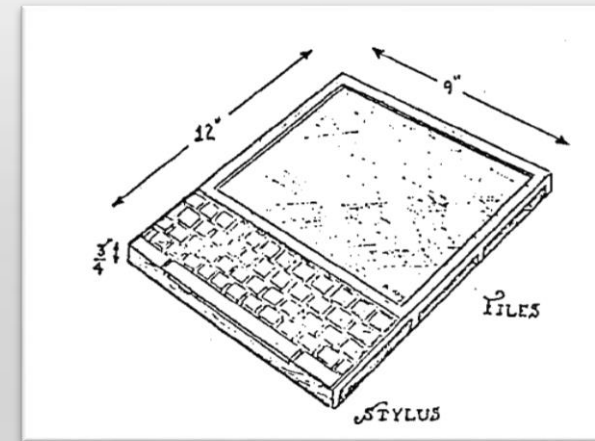
Piaget is referenced frequently in Alan Kay's Dynabook '72 Dynabook paper.



Seymore Papert studied with Piaget and created LOGO. He coined the term "constructionism."



Mitchel Resnick studied with Papert at MIT and led the Scratch team.



## A crash course

# Maria Montessori, MD

- Born: August 31, 1870 in Italy; died in 1952, age 82 in Netherlands.
- The first female in Italy to be an MD.
- An only child; said to be “strong willed.”
- Never married; had one son -- Mario Montessori
- She did research on “idiot” or “defective” children in the slums of Rome that shaped her work.
- Invited to USA by Bell & Edison, spoke at Carnegie Hall in 1915. Forced into exile to India in WWII.



“The greatest sign of success for a teacher... is to be able to say, ‘The children are now working as if I did not exist’.”





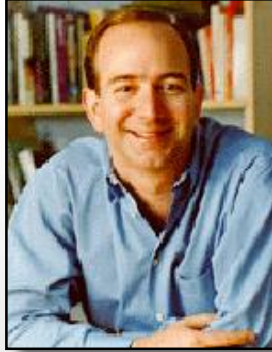
Larry Page; son of Carl Victor Page (MSU computer science professor) attended Okemos Montessori School (now called Montessori Radmoor) from '75 to '79. He also attended Interlochen Academy and the University of Michigan; taking a class from Elliot Soloway



Will Wright had a "brief, intense" elementary Montessori experience in Atlanta GA, until sixth grade. (See Maria Montessori: The 138-Year-Old Inspiration Behind Spore, Kotaku <http://bit.ly/8uiER>)



Serge Brin attended Paint Branch Montessori School in Adelphi, Maryland. He tried unsuccessfully to get into M.I.T. but made it into Stanford instead. In 1995, Sergey got into a two-day argument at Stanford with a visiting younger U of M student, Larry Page. They ended up working together.



Jeffrey Bezos took his crib apart with a screwdriver. After his Montessori early education, he attended River Oaks Elementary in Houston from the 4th to 6th grades. By his mother's account he got so engrossed in the details of activities at his Montessori school that teachers had to pick him up in his chair to move him to new tasks. <http://bit.ly/afmDhb>



***"Free the child's potential, and you will transform him into the world" — Maria Montessori***



## Busy Shapes Testing Footage

<https://youtu.be/JDTmbHYvVYk>

Builds classification, logic, shapes, colors, motion, spatial thinking.

Edoki Academy. \$2.99.

Ages 2-5.

# What might Maria Montessori say?



- Technology can be part of the problem. But it can also be part of the solution.
- An app is merely another material.
- She'd like Chip's "it's not about screen time. It's about time."
- Keep an open mind, use scientific method.
- Keep things in balance. Screens are highly symbolic, and removed from reality. But this is also a strength.
- You can buy a lot of attribute blocks for the price of one iPad.
- No technology can replace the touch of a sparrow's feather



# What might BF Skinner say?

- Apps like Angry Birds and Candy Crush are case studies in applied behaviorism.
- It's fascinating to see how conditioned we all have become to technology based cues.
- Methods of operant conditioning have migrated successfully, for better or worse, from the casino into children's apps.
- Today's smart phone is the ultimate teaching machine.

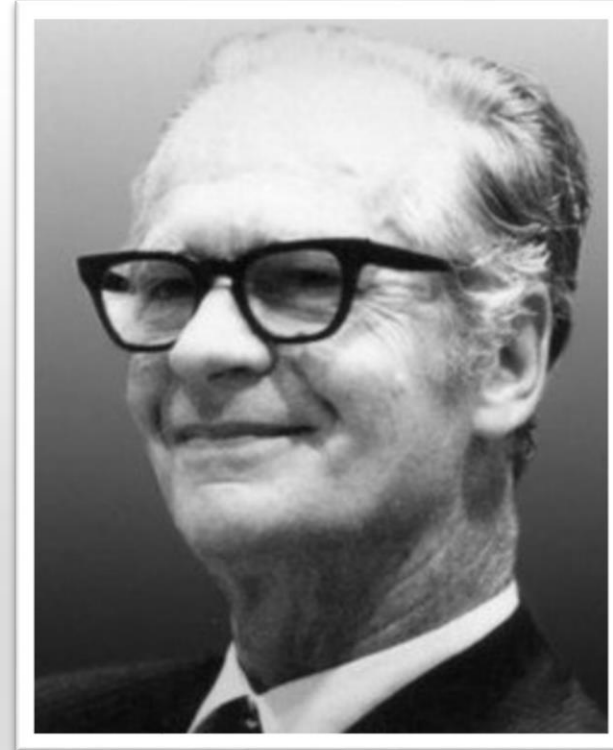


Image: Wikimedia

# Tokens and badges are everywhere...

Can you recognize them?

Are they decreasing your intrinsic motivation?



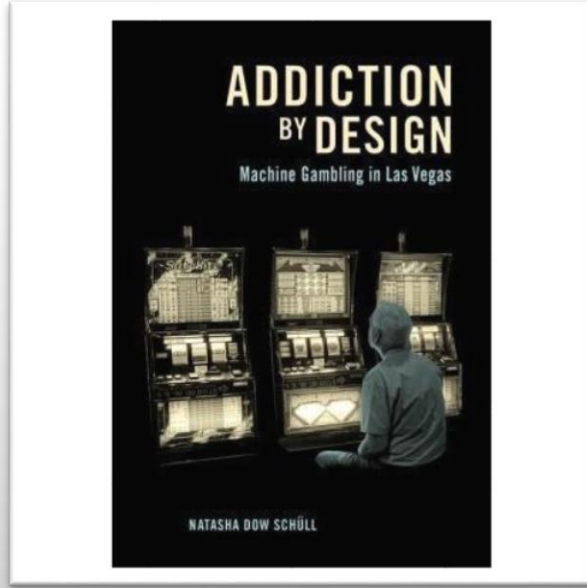
Image: NYTimes

## Are they decreasing your intrinsic motivation?



Image: NYTimes

# Natasha Dow Schüll

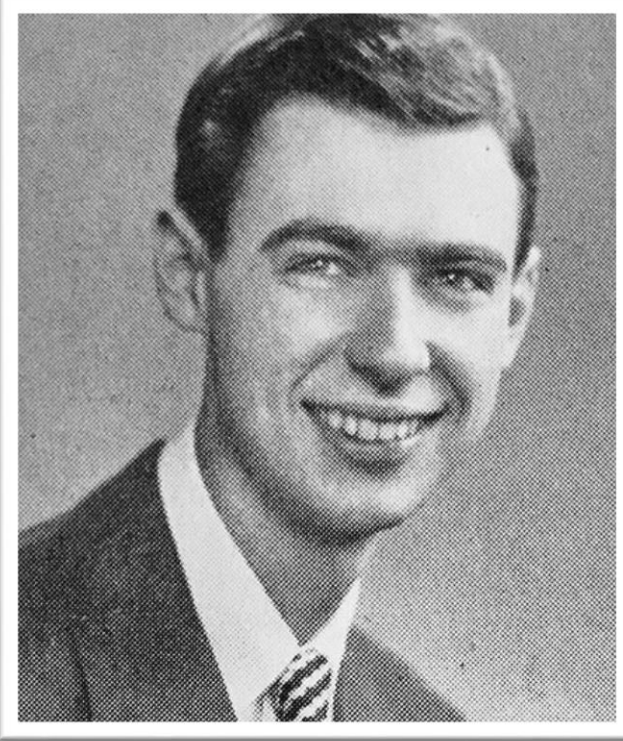


- A cultural anthropologist
- Researching how technology mediates addictive behavior
- Professor at NYU
- Coined the term “Ludic Loop”





# What might Fred Rogers say?

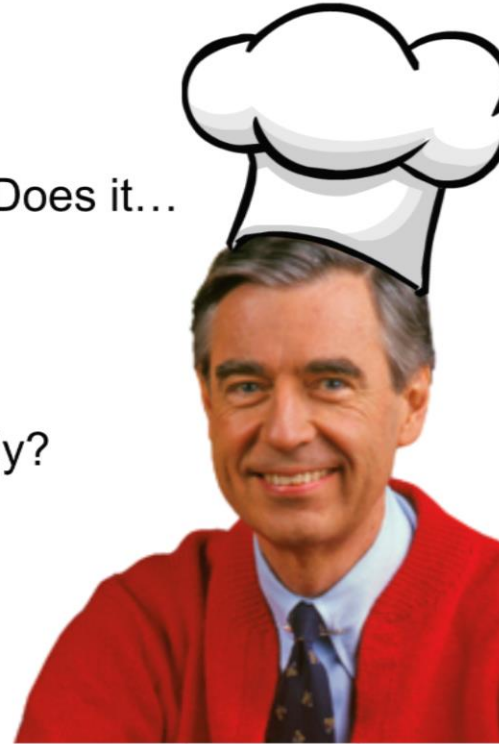


- The distance between any media product and a child is a sacred space.
- Quality isn't cheap, and it requires hard work – like playing the piano.
- Focus on just one little buckeroo.
- Slow it down, get it right
- Learn “Fred-ish”
- Be your honest self. Show children how it works. Don't sugar it up or water it down.
- It's OK to turn it off.

## Chef Fred Rogers

Six ingredients for a media project. Does it...

1. Create a sense of worth?
2. Create a sense of trust?
3. Spark curiosity?
4. Ask you to look and listen carefully?
5. Encourage the capacity to play?
6. Allow for moments of solitude?



(Rogers & Head, 1983)



# Slow Success



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# Empowering



# Focus on “one little buckeroo”

1997



2009



2018





# David Newell: What Would Fred say about Technology?



<https://youtu.be/Phbu4gSWxug>





You can prevent child drownings by building walls around pools.

But you can get the same result by teaching a child to swim.

One approach puts your limited energy into restrictions; the other into child empowerment.

It can help to boil down your screen time strategy to three words – access, balance, and support, or A.B.S.



# Mihaly Csikszentmihalyi

1. Born in Italy in 1934, still alive.
2. Best known for flow (or autotelic) state.
3. Interested in “Positive Psychology”
4. People are happiest when they are in a state of flow—a state of concentration or complete absorption.
5. Many forms of IM foster flow.

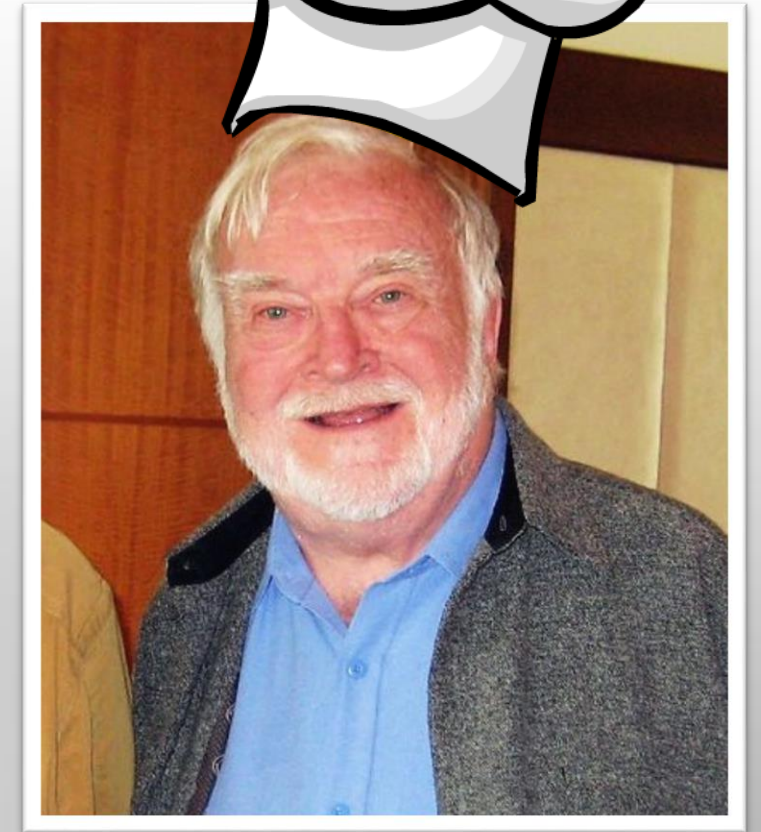


Image: Wikimedia

# ABS = Access, Balance, Support

**A is for Access** to all forms of quality media. There's only one way to learn how technology works – to get your hands on it. That means playing, fiddling and sometimes testing the limits of smart speakers, laptops, flying drones, touch screen tablets. Actively seek quality apps – [here are a few](#) (CTREX).

**B is for Balance.** Just as a healthy diet consists of a variety of foods, a child needs a mix of concrete and abstract, real and pretend. Camping, tending a garden, taking care of a puppy or practicing the clarinet can help offset abstract screen time.

Technology is  
part of the  
problem.

But it is also  
part of the  
solution.

**S is for Support.** Left on their own with YouTube, most children will gorge themselves. They need old-fashioned supervision and role models to set limits and demonstrate how to use technology to enhance and empower (rather than distract and waste time).



A new golden rule for children's media creators.

**“Do unto other people’s  
children as you would do  
unto your own.”**



# What have I learned?

- Technology is culture – a reflection of the good and bad in humanity.
- A theoretical framework helps you better understand emerging technologies.
- We are living in a time of tremendous opportunity. We must keep our focus..





...remember  
the boss.

Thanks

Warren Buckleitner, Ph.D.  
[www.childrenstech.com](http://www.childrenstech.com)

