
LEARNING CREATIVE LEARNING (MAS.712)

Spring Semester 2016

Wednesdays 10:30-12:30

We live in an era of rapid change -- so the ability to think and act creatively is more important than ever before. Unfortunately, most activities in children's lives, whether it's lessons in the classroom or games in the living room, are not designed to help them develop as creative thinkers. In this course, we explore new technologies, activities, and strategies to engage children in creative learning experiences, so that they are prepared to flourish in a fast-changing world.

The course is divided into two half-semester modules. Students can sign up to participate in either or both modules (6 units each).

The first module (Lifelong Kindergarten) will focus on a framework for understanding and supporting creative learning, based on what we call the Four P's of Creative Learning: Projects, Passion, Peers, and Play. Through hands-on activities and discussions, this module will explore strategies for supporting interest-driven, project-based, collaborative approaches to learning.

The second module (Toys to Think With) is a project-centric class focused on the design and creation of toys for creative learning. Through in-class activities and discussion, this module will explore toys through the lens of interaction design and constructivist learning theory. Each class is centered around a design principle relevant to creative learning, including: agency, comparability, tinkerability, and accessibility.

Note: The second module will be offered in the same time slot as [Massive: The Future of Learning at Scale](#) (MIT course 11.S942). So students taking the first module of Learning Creative Learning can opt to take Massive during the second half of the semester.

Want to sign up for one or more modules? Fill out this [registration form](#). We'll send you a confirmation by February 4.

Summary info for registration:

Learning Creative Learning (Lifelong Kindergarten + Toys to Think With) - MAS.712 - 12 units

Lifelong Kindergarten **without** Toys to Think With - MAS.890 - 6 units

Massive, the Future of Learning at Scale (alternative to Toys to Think With) - 11.S942 - 6 units

MODULE #1: LIFELONG KINDERGARTEN

Facilitated by Mitchel Resnick (mres@media.mit.edu)

TAs: Jennifer (jacobsj@media.mit.edu), Moran (morant@media.mit.edu), Carmelo (tarmelop@media.mit.edu)

Room E14-633

February 3: Creative Learning

Introductory presentation by: Mitchel Resnick ([slides](#))

In-class activity

[Marshmallow challenge](#)

Activity for next week (post your [slide](#))

Read Seymour Papert's essay on [Gears of My Childhood](#) and create a slide about an object from your childhood that interested and influenced you. For inspiration, here are some childhood-object stories that others have written: [Cello](#), [Knots](#), [Stars](#), [Blocks](#), [Steps](#), [Coloring Set](#), [Kites](#), [Pencils](#). (Most of these stories are from Sherry Turkle's books *Evocative Objects* (2007) and *Falling for Science* (2008). Also, see Sherry Turkle's [Introduction](#) about evocative childhood objects.)

Primary Reading for next week (post your [slide](#))

Mitchel Resnick (draft): *Lifelong Kindergarten: Chapter 1* ([pdf](#))

Other Resources

LEGO Foundation (2014): [Cultures of Creativity: Nurturing Creative Mindsets](#) (video).

Seymour Papert (1980): *Mindstorms* ([Chapter 1: Computers and Computer Cultures](#)).

Mitchel Resnick (2014): [Lifelong Kindergarten](#). Brainwaves Video Anthology (video).

Mitchel Resnick (2007). [All I Really Need to Know \(About Creative Thinking\) I Learned \(By Studying How Children Learn\) in Kindergarten](#). ACM Creativity & Cognition conference.

Sir Ken Robinson (2006): [Do Schools Kill Creativity?](#) TED Talk (video).

February 10: Projects

Conversation with: Andrew Sliwinski

In-class activity

Hands-on exploration with Scratch

Activity for next week

1. Make a Scratch project for someone significant in your life (and add the project to the [class studio](#)).
2. Try some introductory coding activities on [code.org/learn](#) (based on Star Wars, Minecraft, or Frozen)
3. Compare the two experiences

Primary reading for next week

Mitchel Resnick (draft): *Lifelong Kindergarten: Chapter 2* ([pdf](#))

Other recommended resources

Dale Dougherty: [The Maker Mindset](#) and [Learning by Making](#)

[diy.org](#): where kids can learn new skills online and share what they make and do with other creative kids

Seymour Papert (1994): *The Children's Machine* ([Chapter 7: Instructionism versus Constructionism](#))

Mitchel Resnick et al. (2009): [Scratch: Programming for All](#). *Communications of the ACM*.

Mitchel Resnick (2012): [Let's Teach Kids to Code](#). TED Talk (video).

Scratch resources: [Tips window](#), [Help page](#).

February 17: Passion

Conversation with: Natalie Rusk

In-class activity

Think of something that you enjoy doing, which you'd like to teach to someone else in the class during the upcoming week. For example: how to dance salsa; how to use a 3D printer; how to play a song on the guitar; how to use a climbing wall.

Activity for next week

Based on match-ups from class, teach something that you're passionate about to someone else in the class, and learn something from someone else in the class. Write about your experiences. What did you learn about different styles of learning and different strategies for teaching?

Primary reading for next week

Mitchel Resnick (draft): *Lifelong Kindergarten: Chapter 3* (pdf)

Other recommended resources

[Computer Clubhouse: Celebrating 20 Life-Changing Years](#) (video).

Daniel Pink (2010). [Drive: The Surprising Truth About What Motivates Us](#) (video).

Natalie Rusk, Mitchel Resnick, & Stina Cooke (2009): [Origins and Guiding Principles of the Computer Clubhouse](#), in *The Computer Clubhouse: Constructionism and Creativity in Youth Communities*

Natalie Rusk (in press): [Motivation for Making](#), in *Makeology*.

February 24: Peers

Conversation with: Philipp Schmidt

In-class activity

Participate in a collaborative Scratch activity.

Activity for next week

Visit a local creative learning space -- a place where people are creating projects, and learning from one another as part of the process. We've listed a few possible locations [here](#), but you can also find your own. Here are some questions you might want to consider when visiting:

- *Projects*: What kinds of projects are people working on? How would you describe the range or diversity of projects?
- *Passion*: Where do the ideas for the projects come from? Are the projects based on individual, group, or community interests?
- *Peers*: Do people help each other learn? Are there mentors in the space? Is there a trajectory of participation from newcomer to leadership roles?
- *Values*: How do people treat each other in the community? Are there community guidelines or values that are discussed or agreed upon?
- *Space*: Which aspects of the physical space support the creative learning process? What materials are available?

Primary reading for next week

Mitchel Resnick (draft): *Lifelong Kindergarten*: Chapter 4

Other recommended resources

Karen Brennan, Mitchel Resnick, & Andres Monroy-Hernandez (2010). [Making Projects, Making Friends: Online Community as Catalyst for Interactive Media Creation](#).

John Seely Brown & Richard Adler (2008): [Minds on Fire](#). Educause Review.

Ivan Illich (1971): *Deschooling Society* (Chapter 6: Learning Webs)

Seymour Papert (1980): *Mindstorms* (Chapter 8: Images of the Learning Society)

Ricarose Roque, Natalie Rusk, & Mitchel Resnick (in press): [Supporting Diverse and Creative Collaboration](#).

Philipp Schmidt (2014): [The Great Peer Learning Pyramid Scheme](#).

Philipp Schmidt, Mitchel Resnick, & Natalie Rusk (2015): [Learning Creative Learning: How We Tinkered with MOOCs](#).

March 2: Play

Conversation with: Karen Wilkinson and Mike Petrich

In-class activity

Coming soon...

Assignment for next week

How would you apply the ideas from this course to your own work (and life)?

Primary reading for next week

Mitchel Resnick (draft): *Lifelong Kindergarten*: Chapter 5

Other recommended resources

Mike Petrich, Karen Wilkinson, & Bronwyn Bevan (2013): [It Looks Like Fun, But Are They Learning?](#), in *Design, Make, Play*

Mitchel Resnick & Eric Rosenbaum (2013): [Designing for Tinkerability](#), in *Design, Make, Play*.

Eric Rosenbaum & Jay Silver: [MaKey Makey gallery of projects](#).

Sherry Turkle & Seymour Papert (1990): [Epistemological Pluralism](#). *Signs*.

Karen Wilkinson & Mike Petrich (2014): *The Art of Tinkering* ([excerpts](#)).

March 9: Creative Society

Conversation with: Natalie Rusk, Philipp Schmidt, Andrew Sliwinski

In-class activity

How would you apply the ideas from this course to your own work (and life)?

Other recommended resources

Mitchel Resnick (2002). [Reforming Educational Reform](#).

Mitchel Resnick (2014). [Rethinking Learning in the Digital Age](#). SeriousScience video series.

Mitchel Resnick & Brian Silverman (2005): [Some Reflections on Designing Construction Kits for Kids](#).

Sir Ken Robinson (2010): [Bring On the Learning Revolution!](#) TED Talk (video).

March 16: No class

March 23: No class

MODULE #2: TOYS TO THINK WITH

Facilitated by Andrew Sliwinski (ascii@media.mit.edu)
Room E15-341

March 30: Agency

Our first class will begin with reflection and discussion on the differences between “toys” and “games”. Following this discussion we’ll dive into the concept of agency as a primary design principle in toys and learning systems.

Readings

[Play, Dreams, and Imitation](#) - Jean Piaget [1952]

[Drive: The Surprising Truth about what Motivates Us](#) - Daniel Pink [2010] (Video)

April 6: Composability

In this class we’ll briefly look at the history of composability as a design principle in toys for creative learning and discuss some of the underlying features of composable systems including: abstraction, modularity, re-use, and neutrality. Examples explored during the class include: Fröbel’s Gifts, Paper Dolls, LEGO bricks, and littleBits.

Readings

[In and Around: Cultures of Design and the Design of Cultures](#) - Andrew Blauvelt [1994]

[Affordance, Conventions, and Design](#) - Don Norman [1999]

Article from “The Ecological Approach to Visual Perception” - James Gibson [1979]

April 13: No class

April 20: Tinkerability

We’ll explore tinkerability as an interaction design principle and dive into some of the details of open-ended creative systems including: transparency, adaptability, feedback loops, and failure states. Examples explored during the class include: Scratch, Makey Makey, and “Redstone” in Minecraft.

Readings

[Designing for Tinkerability](#) - Resnick, Rosenbaum [2013]

April 27: Accessibility

We’ll examine various forms of accessibility by dissecting contemporary examples of toys and their packaging (both physical and virtual). Examples explored during the class include: LEGO bricks, Toca Boca, and DIY.org.

Readings

Operating Manual for Spaceship Earth - Buckminster Fuller [1968]

Epistemological Pluralism - Turkle, Papert [1990]

Gender in Play: How Toca Boca Creates Apps for All Kids - Toca Boca [2015]

May 4: Evaluation Methods

We'll explore various different qualitative and quantitative evaluation methods for creative learning systems.

Readings

Lifelong Interactions - Read, Markopoulos [2008]

First Contact - Jason Krogh [2013]

May 11: Final Presentations
