

Slides, speaker notes, and audio recording of Mitch Resnick's introductory presentation at the 2010 Creative Computing/CS4HS workshop hosted at the MIT Media Lab.

- **Big ideas handout**

URL: <http://scratched.media.mit.edu/resources/computational-thinking>

Audience: Educators

Approximate length: n/a

Materials needed: Handouts

Two-page handout that summarizes our framing of computational thinking concepts and computational thinking practices, as well as design-based approaches to learning.

- **Surprise me (a.k.a. Monkey Business)**

URL: <http://scratched.media.mit.edu/resources/monkey-business>

Audience: Educators, Students

Approximate length: 30 minutes

Materials needed: Computers, projector, Scratch, handouts

Handout for the "Surprise me"/"Monkey business" activity. This is an activity with very little scaffolding. After demonstrating the basic mechanism of snapping blocks together, participants are asked to make a project in which something surprising happens either to themselves or to a monkey. The handout provides some additional scaffolding by recommending particular blocks to experiment with. After participants have had about 10 minutes to work on their projects, participants are gathered to share different things they learned or noticed about Scratch as they created their projects.

- **Account creation**

URLs: <http://scratched.media.mit.edu/>, <http://scratch.mit.edu/>

Audience: Educators

Approximate length: n/a

Materials needed: Computers, projector, Scratch, network connection

Links to the ScratchEd and Scratch websites. Participants can create accounts on the two sites to share and find Scratch projects, and to share and find Scratch educator resources.

Session #2: Art

The main objectives of this second session are to: (1) develop greater fluency with Scratch through hands-on experiences in the art genre, (2) explore the computational concepts of sequences and loops.

Activities/Resources

- **Marching orders**

URL: http://csunplugged.org/sites/default/files/activity_pdfs_full/unplugged-12-programming_languages.pdf

Audience: Educators, Students

Approximate length: 30 minutes

Materials needed: Paper, pencils, images to recreate

Handout describing the "Marching orders" activity, created by Computer Science Unplugged. Computers are powerful, but they don't do things on their own. They require instructions to be able to do things, and the act of specifying instructions is programming. In this activity, participants experience what it's like to "be programmed", given instructions for how to draw a picture.

- **Orange square, purple circle**

URL: <http://scratched.media.mit.edu/resources/square-circle>

Audience: Educators, Students

Approximate length: 45 minutes

Materials needed: Computers, projector, Scratch, handouts

Handout describing the "Orange square, purple circle" activity, with recommended blocks, and a set of sample projects. Participants create projects that include an orange square and a purple circle, playing with visual constraints.

- **Interactive collage**

URL: <http://scratched.media.mit.edu/resources/interactive-collage>

Audience: Educators, Students

Approximate length: 60 minutes

Materials needed: Computers, projector, Scratch, handouts

Handout describing the "Interactive collage" activity. Participants create an interactive project about a topic of interest that responds in different ways to mouse clicks.

Session #3: Stories

The main objectives of this third session are to: (1) develop greater fluency with Scratch through hands-on experiences in the story genre, (2) explore the computational concepts of parallelism and events.

Activities/Resources

- **Doing two things at once**

URL: <http://scratched.media.mit.edu/resources/blocks>

Audience: Educators, Students

Approximate length: 30 minutes

Materials needed: Paper Scratch blocks

PDFs and JPGs of Scratch blocks for the "Doing two things at once" activity. Participants use the paper blocks to program solutions to several challenges that explore the concepts of parallelism (making things happen at the same time) and events (one thing causing another thing to happen) proposed by the facilitator, including having:

- one person doing one task (like walking), then introducing the notion of resetting
- one person doing two tasks (like walking and talking)
- a second person simultaneously doing a task (like talking)
- the second person doing a dependent task (like talking after the first person)

- **Pass-it-on story**

URL: <http://scratched.media.mit.edu/stories/csed-week-day-4-wise-dance-party>

Audience: Educators, Students

Approximate length: 60 minutes

Materials needed: Computers, projector, Scratch

Video documenting the "Pass-it-on story" activity, as done with a group of teenage girls. Participants collaboratively construct a story by each starting a story and then rotating to another computer, continuing the story found there. After two rotations, participants return to their computers to see how the story has evolved.

- **Story time**

URL: <http://scratched.media.mit.edu/resources/story-time>

Audience: Educators, Students

Approximate length: 90 minutes

Materials needed: Computers, projector, Scratch, handouts

Collection of one-page handouts with different story-themed starter projects:

- a slideshow of pictures and audio narration
- a conversation between two characters
- a dynamically created story
- a multi-scene story

Session #4: Sensing

The main objectives of this fourth session are to: (1) develop greater fluency with Scratch through hands-on experiences in the sensing genre, (2) explore the computational concepts of conditionals and operators.

Activities/Resources

- **Debug it**

URL: <http://scratched.media.mit.edu/resources/debug-it>

Audience: Educators, Students

Approximate length: 30 minutes

Materials needed: Handouts

Collection of five small Scratch programs that aren't working the way the creator intended. Participants work in small groups to debug the programs, and then share their solution approaches.

- **WeDo**

URL: <http://scratched.media.mit.edu/resources/wedo-project-ideas>

Audience: Educators, Students

Approximate length: 90 minutes

Materials needed: Computers, projector, Scratch, WeDo robotics kits, handouts

Collection of one-page handouts with different WeDo-themed starter projects:

- using the distance sensor and set size block to make the cat smaller and larger
- using the distance sensor, set color effect block, and the play note block to make the character change color and play music
- using the tilt sensor and change x/y blocks to make the cat move around the stage
- using the tilt sensor and next costume block to scroll through a sprite's costumes
- using the motor blocks, key pressed blocks, and move block to control the motor and move the cat by pressing the left and right arrows

Session #5: Games

The main objectives of this fifth session are to: (1) develop greater fluency with Scratch through hands-on experiences in the games genre, (2) explore the computational concepts of variables and lists.

Activities/Resources

- **Adding variables to a game**

URL: <http://scratched.media.mit.edu/stories/meaningful-and-motivating-use-variables-game-project>

Audience: Educators

Approximate length: 5 minutes

Materials needed: Computer, projector, Scratch

Speaker notes, and video recording of Mitch Resnick introducing variables in a game context.

- **Let's play**

URL: <http://scratched.media.mit.edu/resources/lets-play>

Audience: Educators, Students

Approximate length: 120 minutes

Materials needed: Computers, projector, Scratch, handouts

Collection of one-page handouts with different game-themed starter projects:

- getting through a maze
- helping a cat navigate a minefield
- spelling a collection of words

Session #6: Conclusion

The main objectives of this sixth and final session are to: (1) develop greater fluency with Scratch through the design of an independent project, (2) explore ways in which Scratch is being used in the classroom.

Activities/Resources

- **Show and tell**

URL: <http://scratched.media.mit.edu/resources/scratch-educator-show-tell-videos>

Audience: Educators

Approximate length: 45 minutes

Materials needed: Computer, projector, Scratch, network connection

Videos of educators describing how they have been using Scratch in the classroom after participating in the Creative Computing/CS4HS workshop.

Using these resources

These resources (except CS Unplugged's Marching Orders) were created by [Karen Brennan](#) and [Mitch Resnick](#). This work is licensed under a [Creative Commons Attribution 3.0 Unported License](#) -- and we encourage you to use, remix, and share everything you find here!

