



Maths and ICT

It's Scratch time!

CCTIC – ESE/IPS 2012

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Inspiration?



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A special person with a special way of *feeling* education...

Falling in Love with Seymour's Ideas

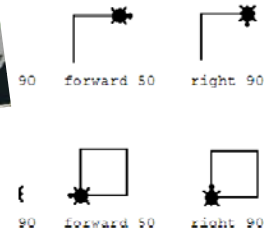
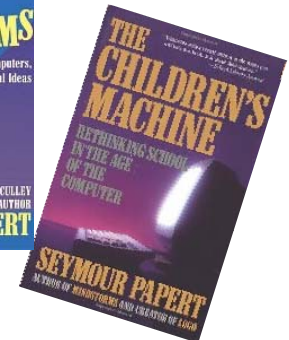
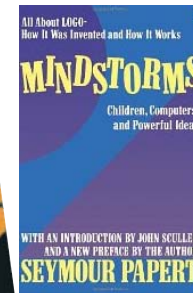
Mitchel Resnick
March 25, 2008

Mindstorms Over Time:
Reflections on Seymour Papert's
Contributions to Education
Research

Presented at a Special Session of the
2008 American Educational Research
Association Annual Meeting



I am reminded of Seymour's essay, *Gears of My C* as the foreword to *Mindstorms*. In that essay he talks about the influence of his early life. How he started playing with gears had a profound impact on his model for thinking about mathematical and scientific education. But the most important thing is that he was a child who loved to play.



From LOGO to Scratch... why and how?

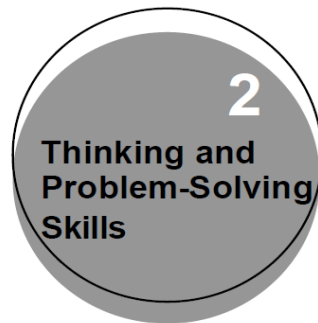


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The follower(s):



21st century Skills



Where can we find Scratch?



Lisbon, Portugal
31st May - 2nd June 2012

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The screenshot shows the Scratch website interface. At the top, there is a navigation bar with links for 'home', 'projects', 'galleries', 'support', 'forums', and 'about', along with a 'Language' dropdown. Below this is a search bar and a 'Login or Signup for an account' button. The main content area features a large blue banner with the Scratch logo and the text 'Create and share your own interactive stories, games, music, and art'. It includes a 'Download Scratch' button and a 'Check out the 2,566,633 projects from around the world!' message. Below the banner are sections for 'Featured Projects' (with thumbnails for 'TUTORIAL THE AN...', 'Jetpack Jeffrey', and 'Shaper'), 'Projects Selected by Legolas_Greenleaf' (with thumbnails for 'New To Scratch?', '*RED*', and 'Scr 1.0'), 'Scratch Day', 'ScratchEd', and 'Scratch Design Studio'.

<http://scratch.mit.edu/>

Where can we find Scratch resources?



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<http://info.scratch.mit.edu/Support>

http://info.scratch.mit.edu/Support/Reference_Guide_1.4

and

<http://scratched.media.mit.edu/>

You can find resources in another languages

The Portuguese experience...



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<http://eduscratch.dgidc.min-edu.pt/>



<http://kids.sapo.pt/scratch/>



Scratch, an important guide



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Scratch Curriculum Guide Draft



- At SCRATCHED <http://scratched.media.mit.edu/resources/scratch-curriculum-guide-draft>
- A design-based introduction to computational thinking with Scratch
- Content Types: Activity, Assessment, Audio and Video, Curriculum, Handout, **Lesson Plan**
- Education Level: **Preschool and Kindergarten, Elementary School**, Middle School, High School, College and University, Professional Development, Other
- Curricular Areas: **Computer Science**, Engineering, Language Arts, **Mathematics**, Music, Science, Social Studies, Teacher Education, Technology, Visual Arts, Other

About SCRATCH



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Scratch is a new graphical programming language designed to support the development of technological fluency. **Scratch** differs from traditional programming languages in several ways:

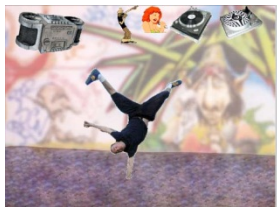
Building-Block Programming

Eliminates syntax errors



Manipulation of Multiple Media

Connects with youth culture



The Scratch project is supported by a grant from the National Science Foundation (Grant No. 0325828). Opinions and findings expressed on this poster do not necessarily reflect the views of the NSF.

Easy Sharing of Projects

Over Internet and mobile devices



Allows Wide Range of Projects

Games, art, stories, music, dance...

Connection to Physical World

Supports multiple design experiences



Tinkerability

Allows playful experimenting with program fragments



Scaffolds for Powerful Ideas

Makes concepts (such as variables) more tangible and manipulable



Scratch, lets start?



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SCRATCH 1.4 INTERFACE

SAVE LANGUAGE

SHARE

SPRITE ROTATION STYLE

CURRENT SPRITE INFO

TABS
Edit scripts, costumes, or sounds.

TOOLBAR

VIEW MODE
Change to large or small stage view.

PRESENTATION MODE
Present your project.

BLOCKS PALETTE
Blocks for programming your sprites.

GREEN FLAG
A way to start scripts.

STOP SIGN
Stops all scripts.

STAGE
Where your Scratch creations come to life.

MOUSE X-Y DISPLAY
Shows location of cursor.

NEW SPRITE BUTTONS
Create a new character or object for your project.

SCRIPTS AREA
Drag blocks in, snap them together into scripts.

SPRITE LIST
Thumbnails of all your sprites. Click to select and edit a sprite.

... taken from Reference Guide MIT

Some challenges...



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- Draw regular polygons
- Create one project that simulates a clock
- Create a new sprite (similar to a petal) and compose figure with rotational symmetry/pattern
- Move a sprite to different places using coordinates
- Create a project with two sprites talking with each other (in two ways: using time and broadcasting)
- Create an animation (think about the waiting time needed to make it perfect)

Scratch and Maths...



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Programming with Scratch engage students in mathematical concepts and thinking:

- Number sense
- Positive/negative numbers
- Percentage
- Fractionary numbers
- Variables, algebra, algebraic thinking
- Spatial sense... Geometry... Coordinates
- ...

Lets think...



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... Future?

What will you do?