

# Scratch – what, why and how?

## Introduction

Scratch overview

What's it for?

Versions – what to look for

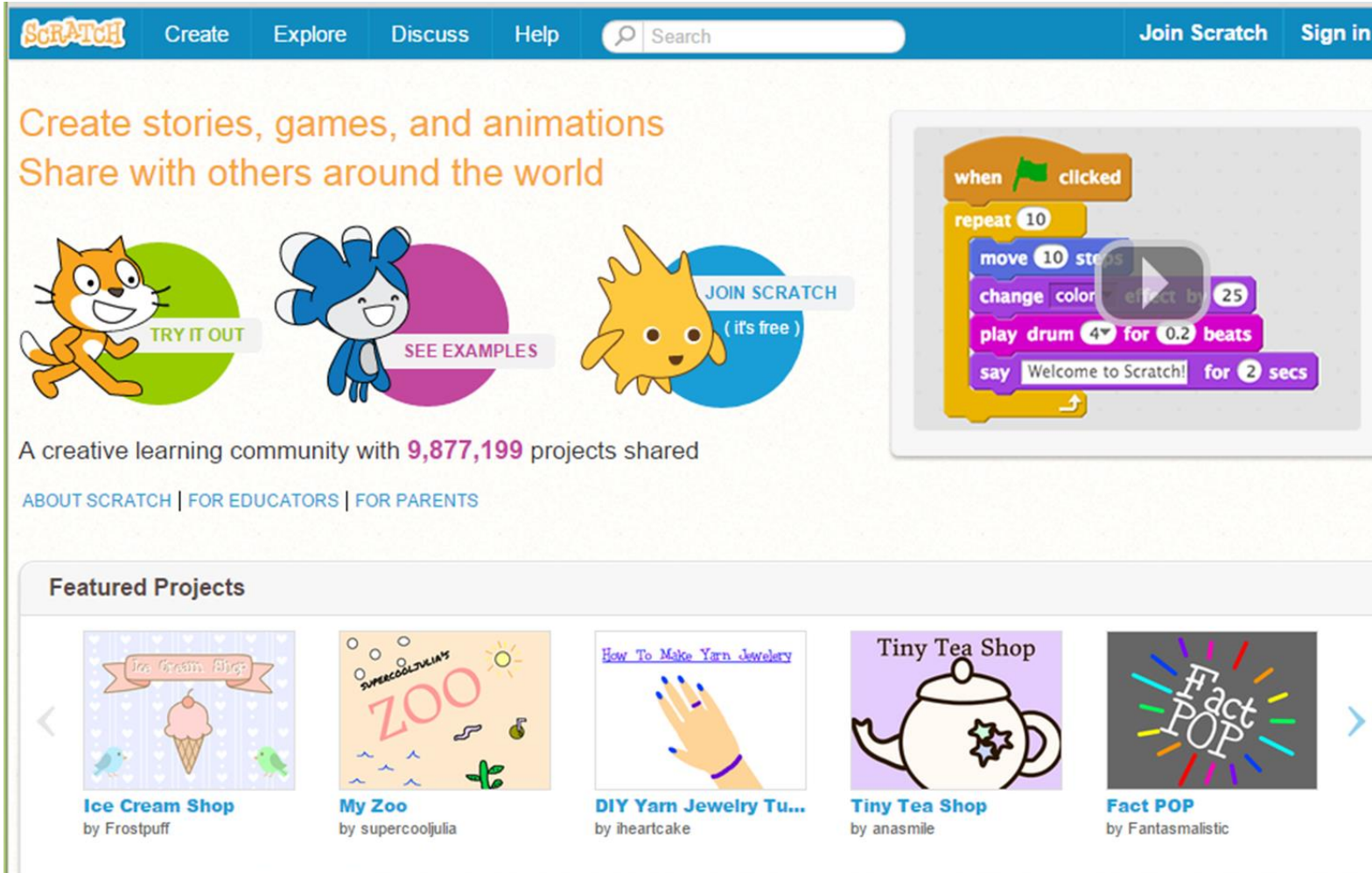
Evidence for using Scratch – Research

Social and community support

Embedding in web sites

# Scratch – what, why and how?

## Animation, coding and fun

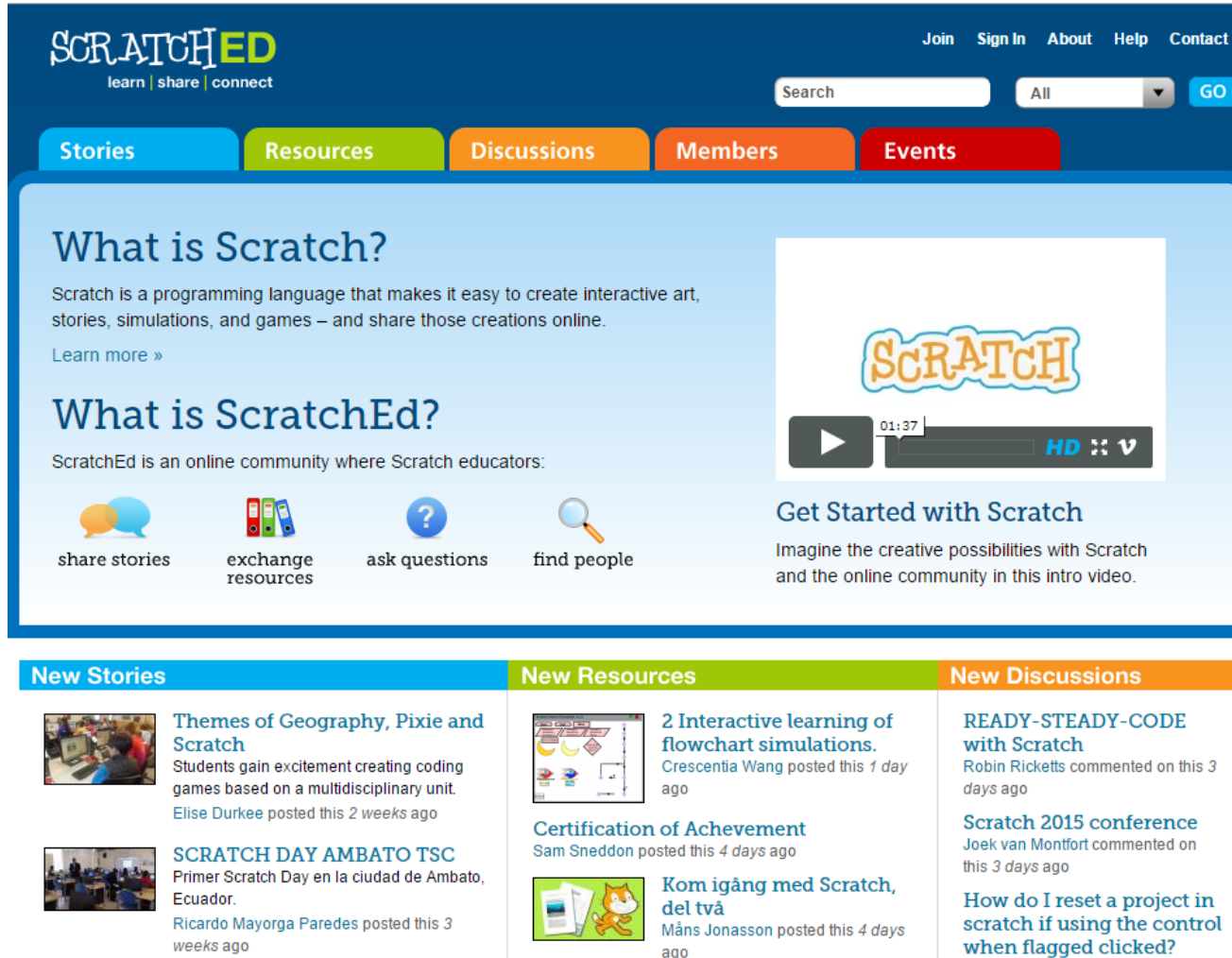


The screenshot shows the Scratch 2.0 home page. At the top is a navigation bar with the Scratch logo, links for 'Create', 'Explore', 'Discuss', and 'Help', a search bar, and links for 'Join Scratch' and 'Sign in'. Below the navigation bar, the main heading reads 'Create stories, games, and animations' and 'Share with others around the world'. There are three circular buttons: 'TRY IT OUT' with the Scratch cat, 'SEE EXAMPLES' with a blue cat, and 'JOIN SCRATCH (it's free)' with a yellow cat. A central code block preview shows a script starting with 'when green flag clicked', followed by a 'repeat 10' loop containing 'move 10 steps', 'change color effect by 25', 'play drum 4 for 0.2 beats', and 'say Welcome to Scratch! for 2 secs'. Below this, it states 'A creative learning community with 9,877,199 projects shared' and provides links for 'ABOUT SCRATCH', 'FOR EDUCATORS', and 'FOR PARENTS'. At the bottom, a 'Featured Projects' section displays five project thumbnails: 'Ice Cream Shop' by Frostpuff, 'My Zoo' by supercooljulia, 'DIY Yarn Jewelry Tu...' by iheartcake, 'Tiny Tea Shop' by anasmile, and 'Fact POP' by Fantasmalistic.

The Scratch 2  
home page.

# Scratch – what, why and how?

## Educational Resources



The screenshot shows the ScratchEd website homepage. At the top, there is a navigation bar with links for 'Join', 'Sign In', 'About', 'Help', and 'Contact'. Below this is a search bar and a dropdown menu set to 'All'. The main navigation tabs are 'Stories', 'Resources', 'Discussions', 'Members', and 'Events'. The central content area features a 'What is Scratch?' section with a video player showing the Scratch logo and a 'Get Started with Scratch' section with a video player showing a play button and a duration of 01:37. Below these are four icons: 'share stories', 'exchange resources', 'ask questions', and 'find people'. The bottom section is divided into three columns: 'New Stories', 'New Resources', and 'New Discussions'. Each column contains several items with titles, descriptions, and posting dates.

**ScratchEd**  
learn | share | connect

Join Sign In About Help Contact

Search All GO

Stories Resources Discussions Members Events

### What is Scratch?

Scratch is a programming language that makes it easy to create interactive art, stories, simulations, and games – and share those creations online.

Learn more »

### What is ScratchEd?

ScratchEd is an online community where Scratch educators:

- share stories
- exchange resources
- ask questions
- find people

### Get Started with Scratch

Imagine the creative possibilities with Scratch and the online community in this intro video.

#### New Stories

- Themes of Geography, Pixie and Scratch**  
Students gain excitement creating coding games based on a multidisciplinary unit.  
Elise Durkee posted this 2 weeks ago
- SCRATCH DAY AMBATO TSC**  
Primer Scratch Day en la ciudad de Ambato, Ecuador.  
Ricardo Mayorga Paredes posted this 3 weeks ago

#### New Resources

- 2 Interactive learning of flowchart simulations.**  
Crescentia Wang posted this 1 day ago
- Certification of Achievement**  
Sam Sneddon posted this 4 days ago
- Kom igång med Scratch, del två**  
Måns Jonasson posted this 4 days ago

#### New Discussions

- READY-STEADY-CODE with Scratch**  
Robin Ricketts commented on this 3 days ago
- Scratch 2015 conference**  
Joek van Montfort commented on this 3 days ago
- How do I reset a project in scratch if using the control when flagged clicked?**

## ScratchEd

An online community of teachers, sharing resources, ideas and questions.

Used by educators from around the world.

# Scratch – what, why and how?

## Overview

Scratch is a simplified environment in which anyone can build graphics, animations and interactive stories.

It's aimed at learners from around Year 3 and up.

Typical users are between 8 and 16 years old.

Scratch is free, developed by the Lifelong Kindergarten Group at the MIT Media Lab.

# Scratch – what, why and how?

## What's it for?

Scratch aims to help young people learn to think creatively, reason systematically and work collaboratively. It's as much about communication and sharing as coding, artwork and story telling.

Students learn with Scratch at all levels and across disciplines - maths, computer science, communication arts, social studies.

# Scratch – what, why and how?

## Versions

### Scratch 1.4

You can install this onto a Windows PC. It will run locally with no networking required.

### **Scratch 2.0 (use this one!)**

Web-based: A community-centric browser-based version with some important upgrades over v1.4, offline version too.

### Scratch Junior

Mobile device friendly – aimed at children, 5-7 years old.

# Scratch – what, why and how?

## Research support for Scratch

- “Scratch greatly facilitated learning the more advanced material in secondary school” (Armoni et al., 2015)
- “Students were observed to display higher levels of motivation and self-efficacy.” (Armoni et al., 2015)
- One study reported that college students who used Scratch for a 3-week introductory course helped the students; that they successfully transferred skills across to mainstream languages. (Wolz et al. 2009)

Scratch – what, why and how?

“Computer Science” content

All visual elements are objects with resources, data and methods (code).

Objects can have private (instance) variables.

There is a simple message passing system to invoke objects.

There are arrays (lists), event handlers, sequences, loops, selection blocks, object creation and destruction.

A good introduction to traditional OO environments!



# Scratch – what, why and how?

## The social side

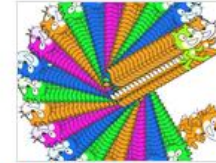
Scratch 2 is browser-based and supports an online community.

Projects are private by default but they may be shared.

Shared projects can be commented on by other users.

Shared projects can also be “remixed” – built on and modified by other users.

### Scratch Design Studio - "Block Dance Party! "



**RAinbow loop**  
by tm20p



**Block Dance Party - ...**  
by lLoveIceCream1



**Canon in D SDS Proj...**  
by IzzyGWC2015

### What the Community is Remixing



**BFDI2 Reboot Signu...**  
by TheNewTeh  
26



**If I Die Young-CC (C...**  
by -GoldenPaw-  
44



**Design A Bear ~ Con...**  
by BlueBearMan  
162

### What the Community is Loving



**Duel [2 Player]**  
by warfame



**Texting Insanity**  
by Instinctive



**Platformer Level Co...**  
by Zaptoe\_Games

# Scratch – what, why and how?

## Embedding Projects in Web Sites

To show a Scratch project in a web page, use the “embed” feature.

It builds a little snippet of HTML, like this example:

```
<iframe allowtransparency="true" width="485" height="402"  
src="//scratch.mit.edu/projects/embed/68039938/?autostart=false"  
frameborder="0" allowfullscreen></iframe>
```

But note that it's wrong! Very frustrating if you don't speak HTML.

It needs to say: src="**https://**scratch.mit.edu/proj..."

# Scratch – what, why and how?

## Share with others

Do you already use Scratch or Python?

Do you want to find out more from real teachers?

This is your opportunity to get together into small groups to discuss

- Best practice, fruitful approaches

- How to use resources and communities best

- Success stories, failures

- The curriculum and how to fit Scratch & Python into it

# Scratch – what, why and how?

## References and links

- Armoni, Meerbaum-Salant and Ben-Ari, 2015, “From Scratch to 'Real' Programming”, ACM Trans. Comp Educ. 14, 4, Article 25 (Feb 2015)
- Wolz, Leitner, Malan and Maloney, 2009, “Starting with Scratch in CS1”, SIGCSE Bulletin 41, 1, 2-3.
- Scratch: <https://scratch.mit.edu/>
- Research: <https://scratch.mit.edu/info/research/>