



Visualizando Aprendizaje con TortugArte

Walter Bender
Claudia Urrea

Raciónale

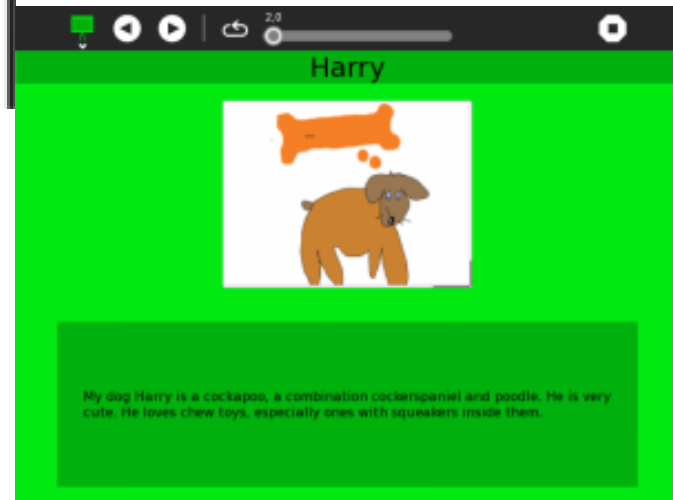
- Fluidez tecnológica
- Creatividad como una habilidad
- STEM vs. STEAM
- Visualizar impacto, a diferente escala:
 - Micro: Portafolios
 - Mezo: Evaluaciones en tiempo real
 - Macro: Comunidades/redes sociales



Micro: Diario y Portafolio



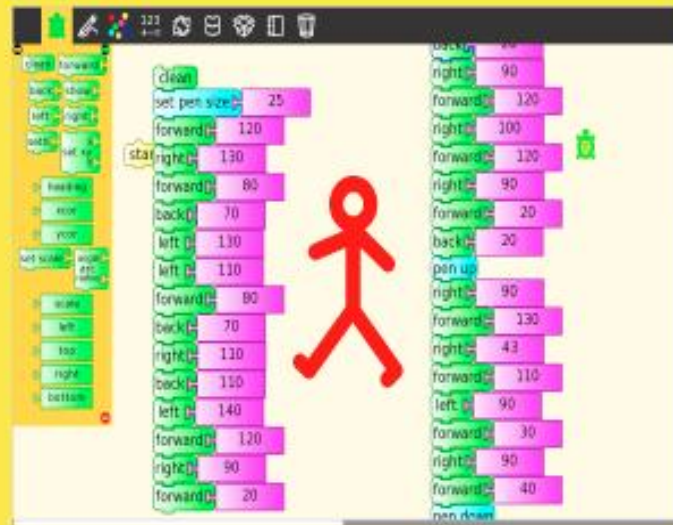
What	Who	When
The Tortoise and the Hare		2 minutes ago
Russian Tortoise - Wikipedia, ...		5 minutes ago
A photo of my cat		yesterday
This fantastic story above ... wrote		yesterday
Image clipping		yesterday
Our school		2 days ago
A movie of my family		3 days ago
Uruguay - Wikipedia, the free...pedia		1 week ago
History of Uruguay		1 week ago
My homework assignment		1 week ago



Portafolio: Student, Nigeria



A Human



Wow on this great day, I made a human being using the turtle art activity

“WOW en esta gran día, yo hice una figura humana usando la actividad de Tortuarte.”

Portafolio: Teacher in Nigeria



Wild animals



A memorize activity, wild animals. This activity matches pictures of animals with their names. Children can use this to identify animals and names. The name of each animal is pronounced as the picture is clicked.

“Una Actividad en Memorizar, animales salvajes consiste en parejas de animales y sus nombres. Los niños pueden usar esta actividad para identificar animales y sus nombres. El nombre de cada animal se pronuncia cuando se hace clic en la foto.”

Mezo: Estrategias en tiempo real



Hacia un sistema de evaluación de aprendizajes en línea
 Andres Peri
 ANEP CODICEN (Uruguay)

ANALISIS DE RESULTADOS INDIVIDUALES

Centro Escuela Nº 598
 Grupo 2º B
 Departamento MONTEVIDEO
 Asignatura: Matemáticas
 Prueba: 2º Matemáticas
 Contenido: Todos

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
LUCÍA BELEN RIVERA LÓPEZ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13
BELÉN PICCOLO ALFARO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14
ANA PAULA NUSSPAUMER AGUI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
LUCÍA ANTONELLA GROSSO MELO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13
AGUSTINA DAUSON BURGUEZ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7
NICOLE SELENA CORTI RODRIGUEZ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11
SIMENA RODRIGUEZ ARREU	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	15
SOFÍA PELOSI FAGOGÁ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7
AGUSTINA COELHO DE LOS S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	17
DAIANA SUSANITA ABAJIO FERNÁNDEZ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13
VIRGINIA CAICOV SCLAVI IRIGOYEN	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12
PAMELA TAMARA ITORBURO VIEYTE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	8
VICTORIA BELEN VINCÓN CARTIER	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14
SELENA MARTINEA MARTÍN	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	6
FEDERICO RICARDO PICHEL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	15
MATÍAS LÓPEZ PEDEMONTE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	8
NICOLÁS MANUEL MOURO SOSA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	21
ADRIANO MAIO LONGO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
CAMILO OTTONELLO VIERA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	19
IVÁN LÓPEZ SALAVERRY	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
FEDERICO MATTONI GONZÁLEZ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14
NICOLÁS AGUSTI MONSELOS TECCO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	9
ARISTÓTELES GAS TZITZIOS CAMAÑO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	6
AGUSTÍN NICOLÁS PÉREZ FERRARI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
	21	8	17	7	13	17	8	17	12	9	14	13	1	7	9	16	16	11	13	10	8	4	11	8	12	

2009



Macro: Impacto a escala

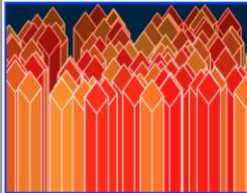


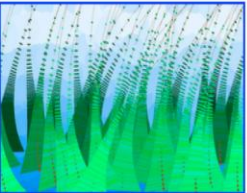
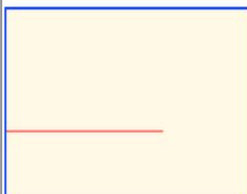
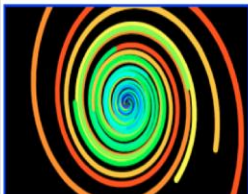


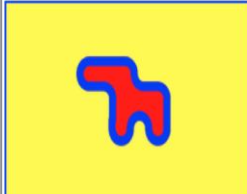

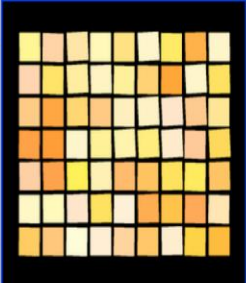
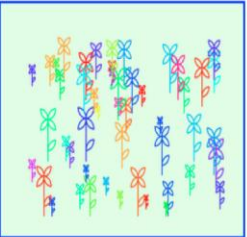


Turtle Art Site - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://turtleartsite.appspot.com/

Turtle Art Site

 urban landscape	 Countdown time	 Love Speaks Volumes	 Trees
 Racing Turtles	 swirls	 Turtle Sees test	 100 turtles
 maze	 turtle in a maze	 grid pattern	 flowers

http://turtleartsite.appspot.com/image.html?image=2370021

Macro: Impacto a escala



SCRATCH
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Plataforma de aprendizaje Sugar



TortugArte



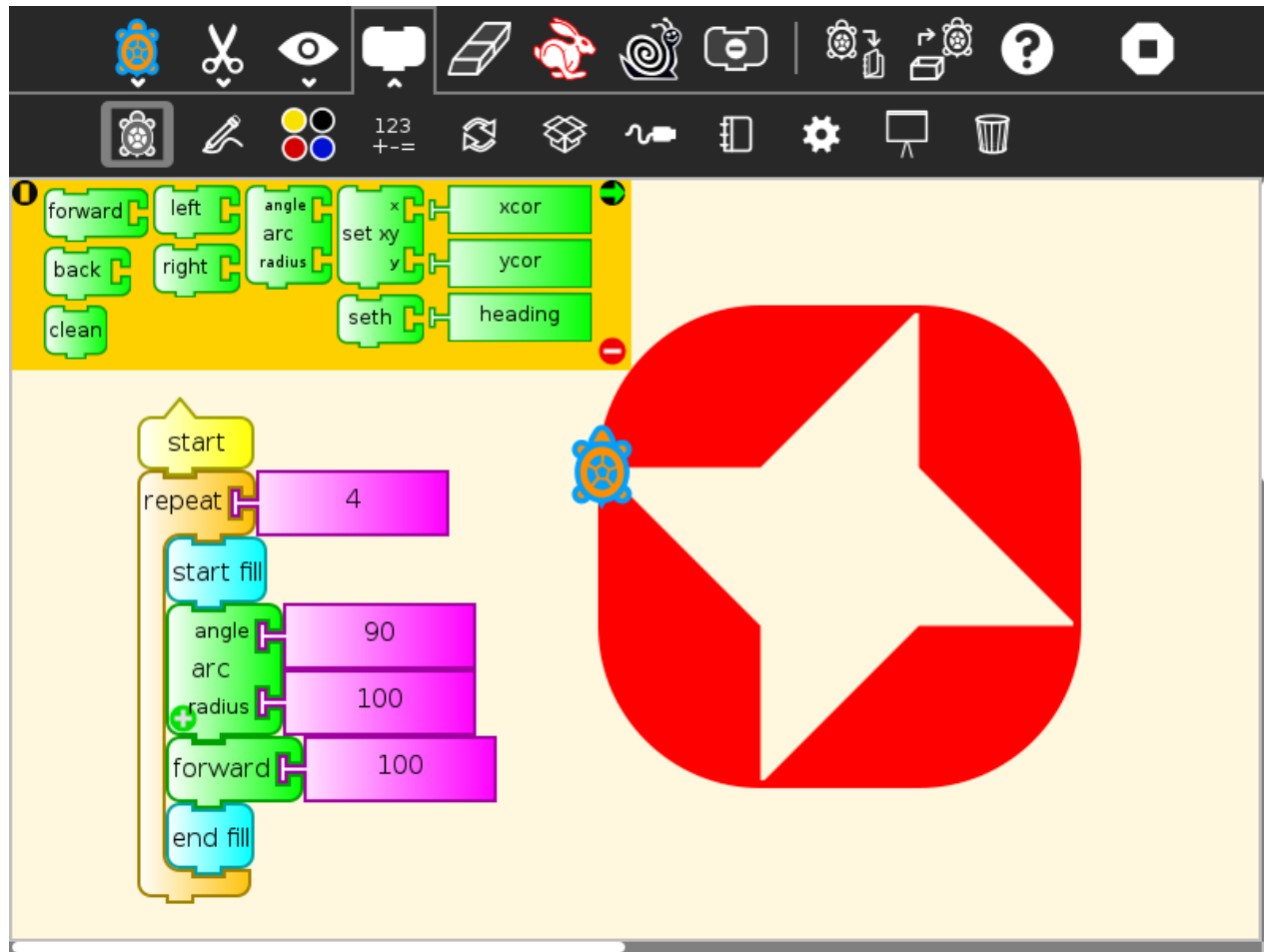
The screenshot displays the Scratch programming interface. The top toolbar includes icons for drawing, colors, text, and other tools. The left sidebar contains a palette of blocks including movement, rotation, and drawing blocks. The main workspace shows a script starting with a 'start' block, followed by a 'repeat' loop with 4 iterations. Inside the loop are 'forward 100' and 'right 90' blocks. To the right of the script, a green turtle icon is positioned at the bottom-left corner of a red square, which represents the path the turtle will draw.

Funcionalidad



The image displays 12 screenshots of the Scratch programming environment, arranged in a 6x2 grid. Each screenshot shows a different set of code blocks, illustrating the software's functionality. The blocks are color-coded: green for motion, blue for sound, yellow for control, purple for operators, red for logic, orange for sensing, and pink for drawing. The screenshots show various block types such as 'forward', 'set color', 'repeat', 'if then else', 'wait', 'push', 'pop', 'print', 'hide block', and 'show block'. The interface includes a toolbar at the top of each screenshot with icons for undo, redo, and other editing tools. The background of each screenshot is a dark gray, and the code blocks are arranged in a sequence, demonstrating the flow of a program.

Rúbrica



The image displays the Scratch programming environment. The top toolbar contains various icons for editing and viewing. The main workspace shows a red star with a white center, created using the following code:

```
start  
repeat (4)  
  start fill  
  angle (90)  
  arc (100)  
  radius (100)  
  forward (100)  
end fill
```

The code block is yellow, indicating it is selected. The 'repeat' block is set to 4 iterations. The 'arc' block is set to 90 degrees, and the 'radius' block is set to 100. The 'forward' block is set to 100 units.



Meta datos

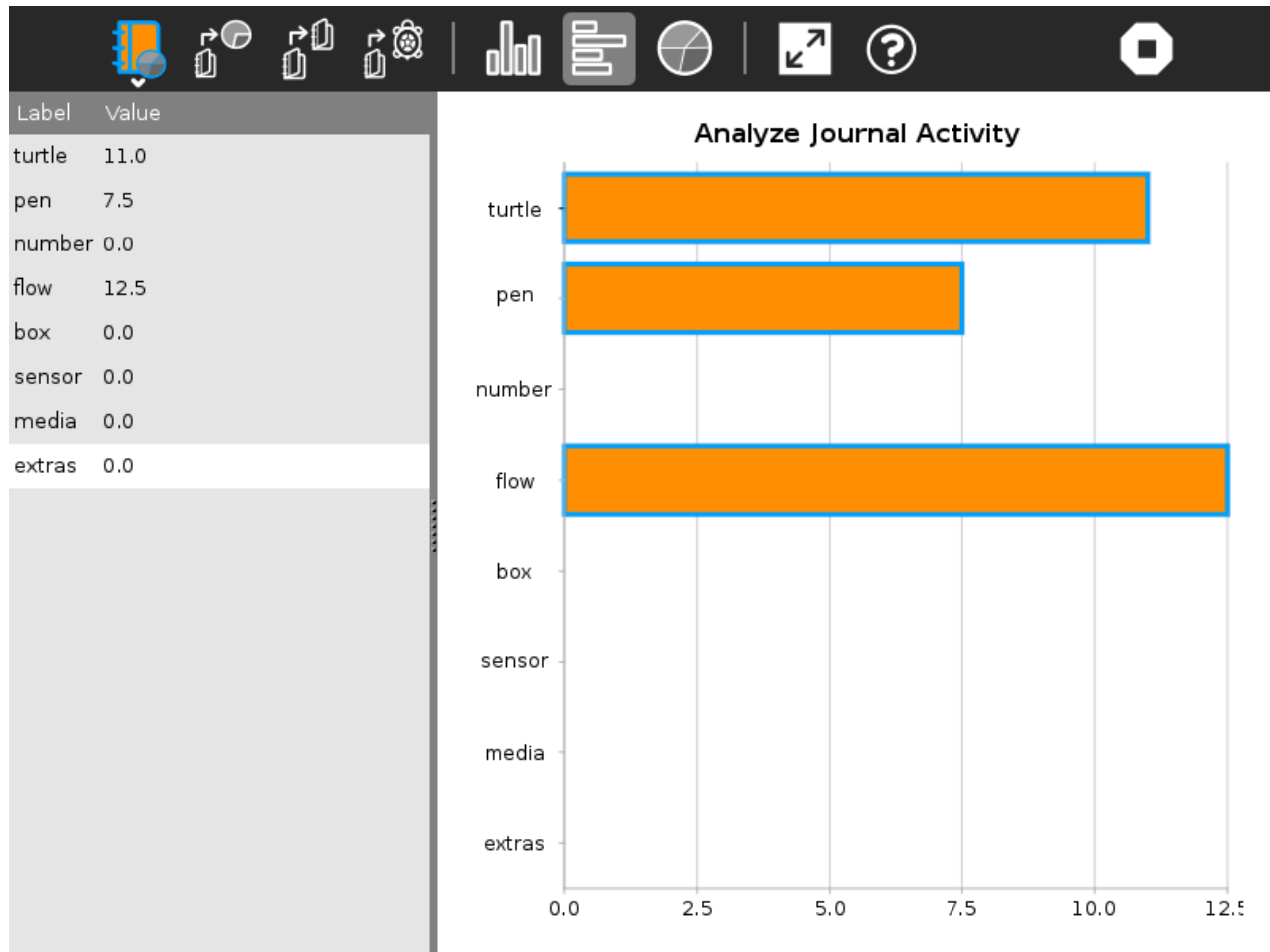
- [[0, ["start", 2.0], 79, 137, [null, 3]],
- [1, "forward", 97, 351, [6, 2, 9]],
- [2, ["number", 100], 168, 351, [1, null]],
- [3, ["repeat", 84], 79, 183, [0, 4, 5, null]],
- [4, ["number", 4.0], 138, 183, [3, null]],
- [5, "startfill", 97, 225, [3, 6]],
- [6, ["arc", 0], 97, 267, [5, 7, 8, 1]],
- [7, ["number", 90], 155, 267, [6, null]],
- [8, ["number", 100], 155, 309, [6, null]],
- [9, "stopfill", 97, 393, [1, null]],
- [-1, ["turtle", "Yertle"], 12.5, 102.5, 0.0, 0, 50, 5]]

Rúbrica

Category	%	Details	%	Category Score	Details	Detail Score
Turtle	5	forward, back, right, left	3.33	5	forward	3.33
		arc, set heading	3.33		arc	3.33
		set xy	3.33			
		coordinates	2.5			
Pen	5	pen up, pen down, pen size	2.5	5		
		start fill, end fill, color, shade	2.5		start fill, end fill	2.5
Number		arithmetic operations	2.5			
		logic	2.5			
		random	2.5			
Flow	10	repeat, forever, wait	5	10	repeat	5
		if, while, until	5			
Block		store in, box	7.5			
		action	7.5			
Media		media blocks	5			
Extras		special blocks	5			
Sensor		sensor blocks	5			
Intention		programming	15			
Sub Totals				20		14.17
					Total	34.2



Herramienta gráfica



Proyecto Conectándonos

- Fundación Quirós Tanzi y el Ministerio de Educación de Costa Rica
- Beneficia 2,700 estudiantes en 15 escuelas

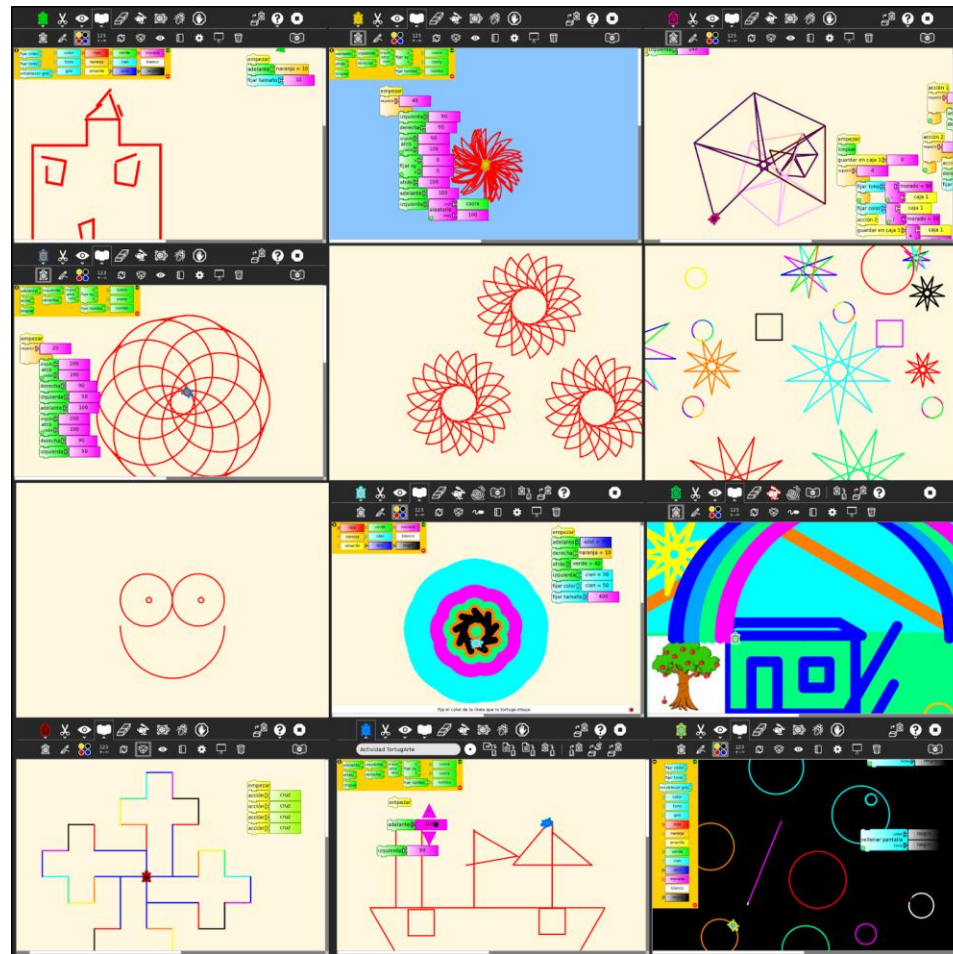


Momentos de TortugARTE

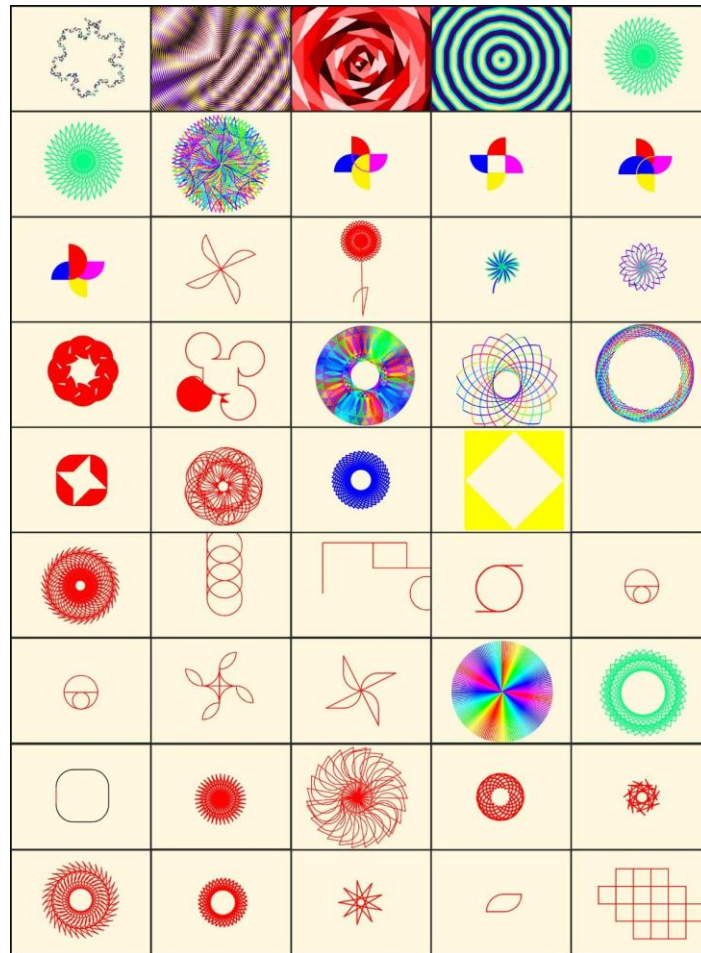
- Reflexión
- Exploración y Colaboración
 - Manual de Tortugarte
- Retos de Tortugarte
- Competencia de Tortugart
 - 150 entregas (diferentes formatos y mecanismos de entrega)



Imágenes de proyectos

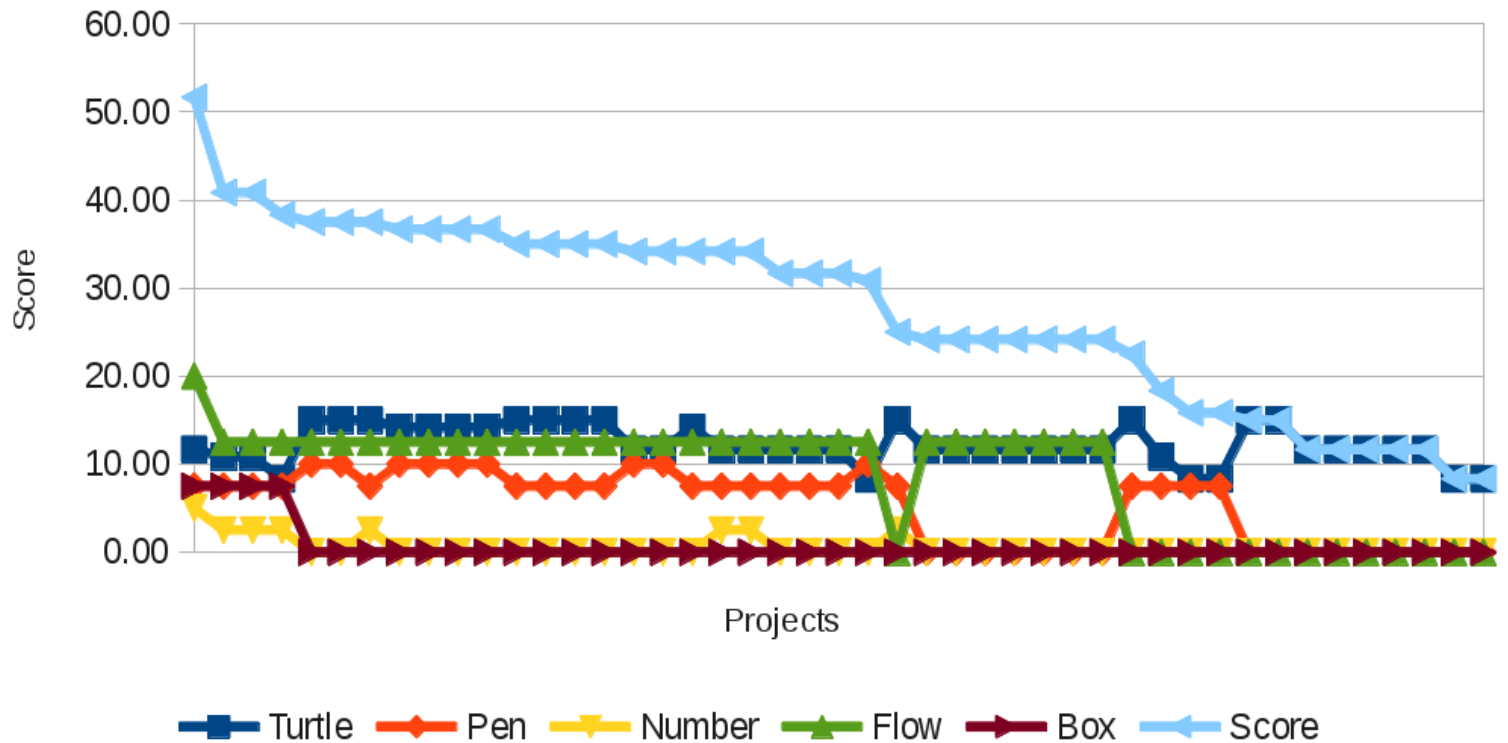


45 Proyectos para estudio



Rúbrica aplicada a los proyectos

Rubric applied to Turtle Art projects



Observaciones

- Análisis automático de proyectos, por categorías (Tortuga, Lápiz, Operadores Flujo, etc.)
 - Puntajes variaron entre 8.33 y 51.66, lo cual sugiere una amplia gama en la complejidad del proyecto
 - La Media es 27.53 y la Mediana es 31,66, lo que indica que la mayoría de los niños incorporan bloques de diferentes categorías
- Manejo de inconsistencias



Discusión

- La complejidad visual y el valoración de la rúbrica están.
- **Bloques de la Tortuga:** 80% - adelante; casi el 50% - atrás; más de 90% derecha e izquierda, 80% - Arco, y menos del 30% - FijaXY
- **Bloques de Pluma:** sólo el 40% - FijaColors; sólo 11% - FijaTamaño del Lápiz; tres proyectos – subir y bajar pluma; ocho proyectos (18%) – Rellena polígonos y segmentos de arco. y ningún proyecto cambia el color de fondo de la pantalla.
- **Bloques de Flujo:** 32 (71%) – Repite; Casi 25% - PorSiempre (6 de ellos para crear animaciones). Ser observó falta de claridad de uso de ambos.
- **Variables:** Sólo 40% de los proyectos utilizo “Caja” para guardar el valor de una variable.



Discusión

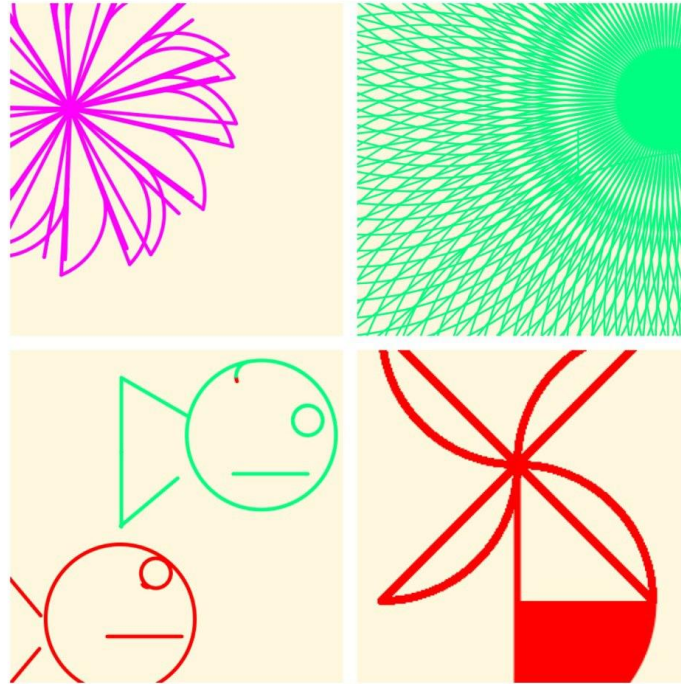
- Repetir con un clic vs. bloque “Repite”
- Animaciones, “Repite” y “PorSiempre”
- Re-mezclas



Conclusiones

- Resultados de la rúbrica y evaluación de maestros
- Los ganadores de la competencia
- Limitaciones de la rúbrica
 - Intención
 - Programación
- Utilidad de la rúbrica al promover Actividades como TortugARTE
- Reiteramos nuestra hipótesis: el arte promueve el desarrollo de habilidades como creatividad y resolución de problemas del mundo de real





<http://www.fundacionqt.org>
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claudia@laptop.org