Pixel Picture

Computer games, apps, and other devices store pictures by reducing them to numbers. Without reducing images into a grid, the file would be too large to store in memory. Create a paint-by-number image to explore how computers convert pictures into number grids.

TEKS:

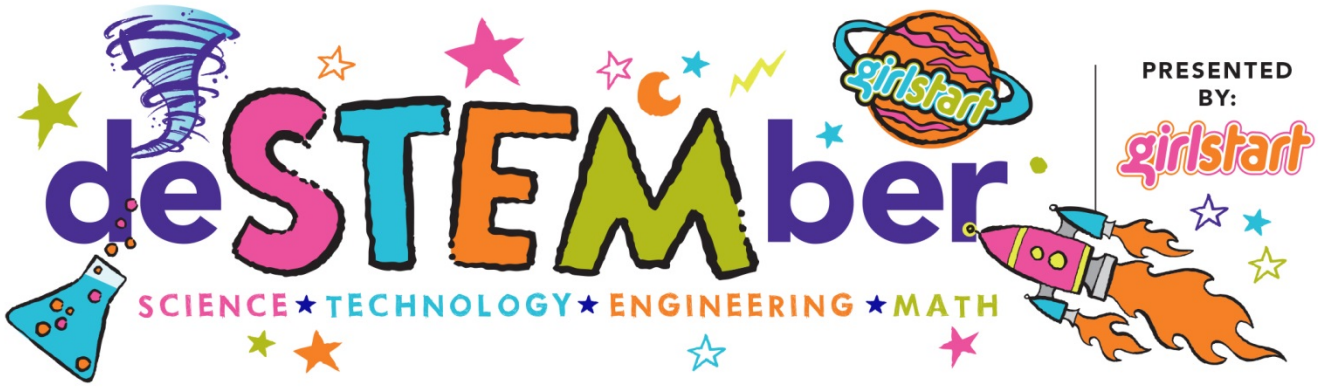
126.32C The student understands technology concepts, systems, and operations as they apply to computer science.
126.48C6B The student demonstrates a sound understanding of technology concepts, systems, and operations, including graphics resolution, pixel depth, and compression.

How To:

1. Look at your copy of 'Activity: Kid Fax' sheet. On the side of each grid are numbers corresponding to the preceding line in the grid.
2. Each number represents a number of pixels, alternating between white and black. Each line **ALWAYS** begins with white!
3. Color in the grid line by line following the numbers on the side.
4. For example, a 2,1,3 line would correspond to 2 white pixels followed by 1 black pixel, followed by 3 more white pixels.
5. Fill in the 'Kid Fax' sheet following the numbers to discover the hidden pictures!
6. Create your own picture on the 'Bonus' sheet grid. Write the appropriate coded lines of numbers. Copy the lines of code to the blank grid on the bottom and give it to a friend to discover your picture!

Materials:

- Printed copy of 'Kid Fax' sheet (found at http://csunplugged.org/sites/default/files/activity_pdfs_full/unplugged-02-image_representation.pdf - page 4)
- Printed copy of 'Bonus: Make Your Own' sheet (found at http://csunplugged.org/sites/default/files/activity_pdfs_full/unplugged-02-image_representation.pdf - page 5)
- Pencils



How Does It Work?

Computers have to convert images into numbers in order to store them. Images are divided into grids and the pixels are stored with a corresponding string of numbers. In computers these numbers are all 0's and 1's in long, complex strings called binary code.

Career Connection:

Graphic designers create visual concepts using computer software to communicate ideas, information, and emotion. Graphic designers can work closely with advertising, public relations, website design, and even video game developers. Most graphic designers have a Bachelor's degree in design or a related field, and additionally, develop a portfolio of their work.

Resources:

- http://electronics.howstuffworks.com/30373-its-all-geek-to-me-pixels-in-pics-video.htm

