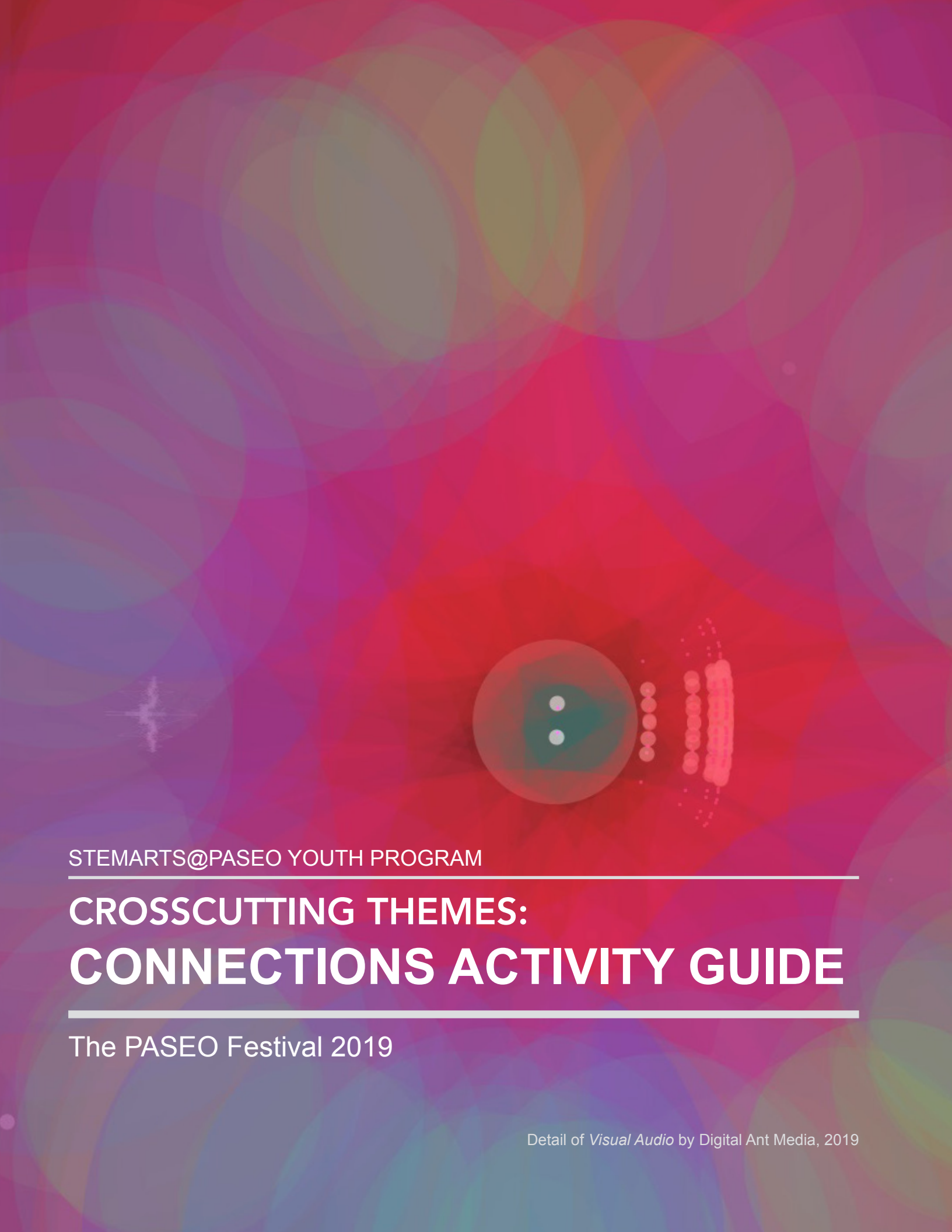


STEMARTS@PASEO YOUTH PROGRAM

CROSSCUTTING THEMES:
CONNECTIONS ACTIVITY GUIDE

The PASEO Festival 2019

Detail of *Visual Audio* by Digital Ant Media, 2019

STEMarts@PASEO Youth Program 2019

CROSSCUTTING THEMES:
Connections Activity Guide

This activity guide provides a review and comparison of each of the seven artist's installation selected for this year's festival as they relate to the festival theme: Connections. The theme celebrates, contemplates, or questions our interactions with each other, nature, and the world. The purpose of this guide is to give students the opportunity to reflect on how the festival artists explore the theme from different perspectives. The activity develops critical thinking around the artist's process, medium and technique, as well as the science and technology behind the work. Having students do this activity before the festival will greatly enhance their festival experience and help develop tools that they can use to integrate science and art to communicate ideas and express themselves.

CROSSCUTTING THEMES 1: Connecting the dots

How do things work? How are things connected? What does it mean?

New Media and Installation artists, like those featured at the Paseo Festival, work in multiple mediums, styles and artistic processes. Creative inquiry is a foundational part of the artistic process, with no wrong answers it allows freedom of exploration into complex interconnected issues. Artist's work often begins with an open-ended question. Open-ended questioning allows creative connections, patterns and techniques to emerge from the research and brainstorming processes. Additionally, it allows for the cross-connection, innovation and boundary breaking to happen across disciplines.

Open-ended inquiry and discovery allow students to make connections between art, science and technology in an open framework that encourages critical thinking, analysis and experimentation. Below are some examples of open-ended questions you can use to engage students into creative inquiry into festival artists:

- *What themes stand out in the artist's work? What patterns do you see?*
- *How does the artist communicate their intention or big idea?*
- *How do the artists approach the materials they use? How do they effect the structure or function of the work?*
- *Do they use them in ways you have ever seen?*
- *What connections can you find in the materials they use, technology they employ or mechanics in their work?*
- *What connections can you find in other Paseo Festival artists or STEM fields?*
- *How can the creative process be applied to complex STEM problems?*
- *Do you see connections in art and science?*
- *Do you think art is a good tool for STEM professions to use to generate innovation or communicate ideas?*
- *What examples come up for you?*
- *Do you know of something in your life that relates to the STEM themes or making techniques the artist used?*
- *Do you have a big idea or design solution? What connections will you have to make to this big idea happen?*
- *What other questions come up for you exploring the artists work?*

"Crosscutting Concepts" from the Next Generation Science Standards: Making deeper connections

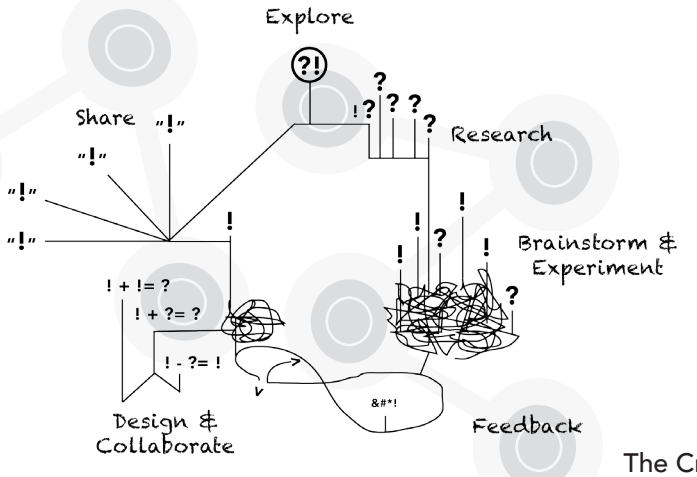
Crosscutting concepts have application across all domains of science and are a way to link the different disciplines of science. Crosscutting concepts include: *Patterns, Cause and Effect, Scale, Proportion and Quantity, Systems and Systems Modeling, Energy and Matter, Structure and Function, Stability and Change. What connections do you see?*

CROSSCUTTING THEMES 2: The creative process

Connecting STEM through creative expression

The creative process is characterized by a non-linear cycle of discovery, experimentation, design and expression. In this process artists and scientists work with abstract concepts, physical materials and techniques that help turn their ideas into reality. Some important tools that help artists and other creative professionals organize their ideas are: brainstorming, mind mapping, and “napkin” sketching. This allows for freedom of expression and focused revision during the iteration and design cycles. Artists and scientists are often solving a creative problem such as: How can I talk about this intangible thing? Or, how can I use these materials to communicate my big idea? Or, how can I develop or re-imagine a technology that can express my big idea? How can the creative process be applied to complex STEM problems?

Artists use the tools of brainstorming, mindmaps and quick sketches to organize their abstract ideas and to identify patterns or new ideas that are exciting or support their big idea. These tools can help at any stage in the creative process to garner fresh ideas, work through problems or refine an idea.



The Creative Process

The Design Tool on each artist page can take you through the STEMarts creative process. **Brainstorm** and create **mind maps** with your class to help organize creative ideas and make deeper connections to festival artists and applied STEM.

Brainstorming is basically a group discussion to produce ideas or solve a problem. This creative thinking tool can take many forms. The objective is to put all your ideas on the table, get all the ideas out there without judgment. A weak or unformed idea might be combined with others to make it a strong concept or big idea. Try a brainstorming exercise with Paseo festival artists. Look at the Artist quick guide and online artist tools. Have students explore individually and come with ideas on what STEM themes they see. Have a discussion and write down all students answers on post-it notes or index cards. Some questions to prompt discussion you might pose are: What STEM themes stand out for you? How many installations share a theme or standard ? How does the artists’s work reflect that STEM theme? What themes are connected? What experiments can we do to explain these concepts or use them in our own installation or design solution?

Mind maps are tools for the visual organization of ideas. They generally center on a main idea and then radiate in spokes that connect detail to a hierarchy of ideas. Using the themes generated in the brainstorming exercise, lay out your notes. What connections can you draw? What new ideas emerge? Move notes around as new themes or connections emerge. What crosscutting concepts do you see in the artists work? Do see any crosscutting concepts you can apply to your own work or to develop a big idea? What questions are left unanswered? What questions do we have for the artist about their creative process?

CROSSCUTTING THEMES 3: Communicating big ideas

Bringing ephemeral ideas into the real world

Communicating and presenting the big idea or intention of your work as an artist or scientist is an important part of the creative process. Artists can communicate complex ideas in installation art. Andy Wagener for example highlights the connection between ghost nets (the discarded materials of the fishing industry) and the experience of traditional Spanish fisherman in his interactive sound installation CLOUDNET. While Antonin Fourneau uses water as a medium for public engagement on novel reactive surfaces in his installation Waterlight Graffiti. Britney King and Jennifer Nev-Diaz speak to the theme of water in their video-projection mapping installation that draws connections between the Water is Life movement and New Mexican water ways with projection maps on sculptural surfaces. All these artists communicate something about our connection with water using the concepts of science, technology, engineering and math. Sketching is a crosscutting tool that is employed by STEM and art professionals to work out complex ideas or capture an in-the-moment flash of brilliance. Scientists and designers use sketching as a tool in diagramming, scientific modelling and data visualization. Artists might use it to make conceptual connections, engineer a solution to a problem, or to communicate their initial ideas before the implementation phase.

A powerful communication tool is the **Napkin Sketch**. It can be used through the creative process to help distill an idea to it's essence, discover new ways to look at a problem, or to find solutions collectively.

In science, engineering and art, quick sketches have led to some of the greatest ideas that effect our daily lives. Quick or preliminary sketches are a good tool to test your readiness to implement an idea. Napkins, scrap paper, paper plates and index cards are low-risk materials that allow for quick experimentation, test the grasp of concepts and the ability to communicate them. Can you express the idea simply? Do you understand the system or problem well enough? What questions come up when trying to communicate your ideas in the solution/artwork you came up with? How might you capture the essence of complex ideas in a simple sketch?

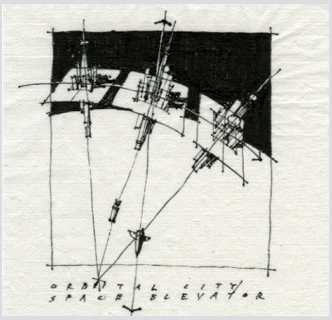
Do napkin sketches- test out the tool! Like the results? Take your ideas as far if you want into the implementation stage, repeating the creative process to realize or communicate a big idea through design iterations, school projects or other creative outlets.

Round 1: Have students sketch a response to one of the artists you explore. Compare notes. How does the artist incorporate STEM into their work? Did anything stand out in the collective response?

Round 2 : As individuals or together: identify a STEM theme to explore and a develop a solution or big idea that you want to communicate. Create a napkin sketch of what an solution (like an interactive installation!) might look like.

Bonus Round: Do napkin sketches at the festival. Has your understanding of what you thought the artist was saying changed after you experienced their installation?

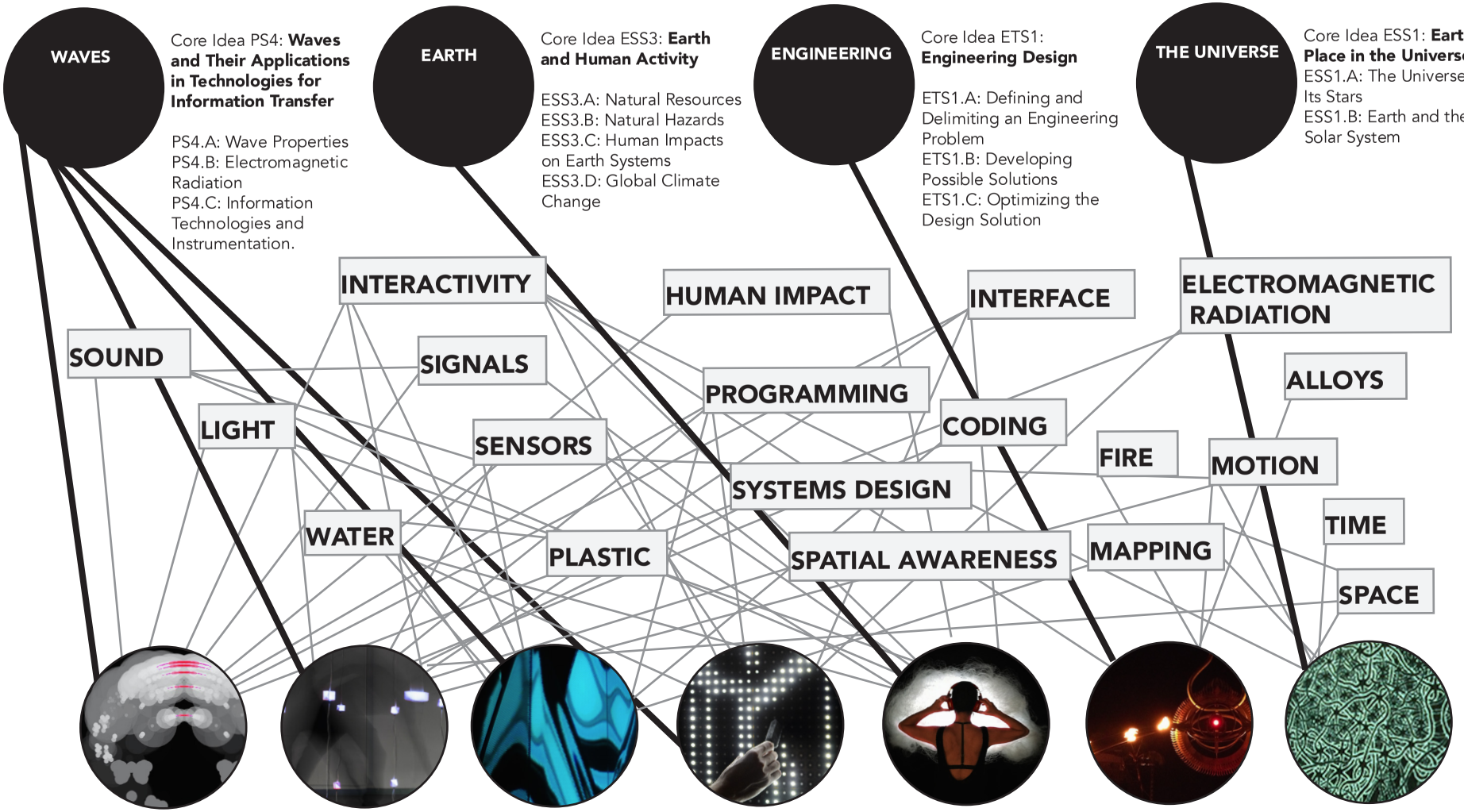
Try sketching at different time intervals! What do you notice about 10 second vs. 10 minute sketches? How might the brainstorming exercise be different with sketches?



Cocktail Napkin Sketch Contest
Winner: *Orbital City/Space Elevator* by Samuel Ringman
(photo: architecturalrecord.com/ 2015-winners)

STEMarts@PASEO Youth Program 2019: Artist Connections Quick Guide

Artists seamlessly integrate science, technology, engineering and math (STEM) in their work. To help make this connection we have aligned each artist's work with one standard from the Next Generation Science Standards that is most prominent for that artist and highlighting some of the crosscutting themes. Ask students to actively search for and identify how and when they see the STEM in the artist's process or work. *What STEM themes can they make connections to?*



Alison Johnson & Thomas Vause
VISUAL AUDIO
Audio-Visual Projection

Lothario Areski
HORS-AFFICHAGE,
Game Installation

Britney King & Jennifer Nev-Diaz
AGAVE,
Video Projection Mapping

Antonin Fourneau
WATERLIGHT GRAFFITI,
Public Installation

Andy Wagener
CLOUDNET,
Interactive Installation

Ryon Gesink
NUMINOUS EYE ARCH
Kinetic Fire Sculpture

Corwin Levi
SO MANY OF US,
Animated Video Installation