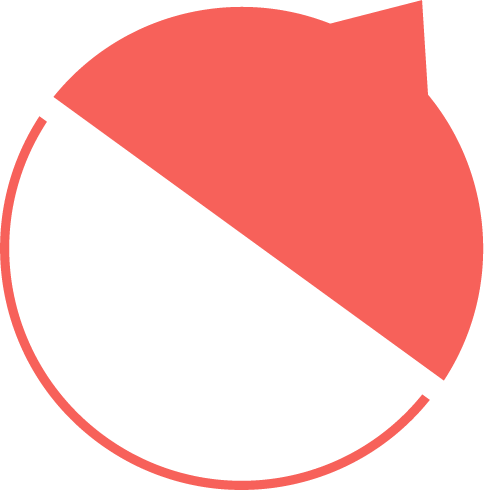
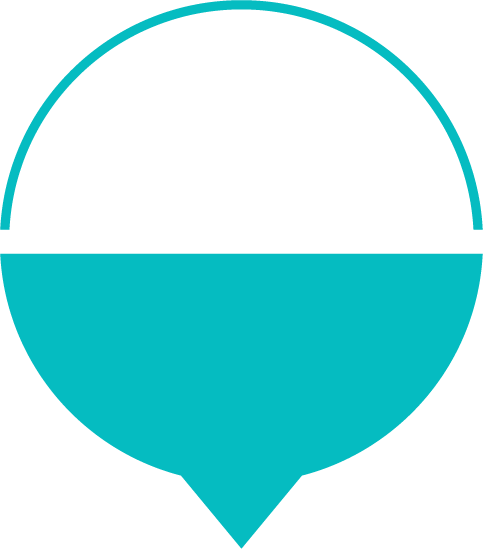
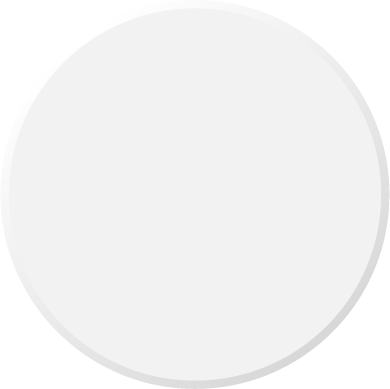
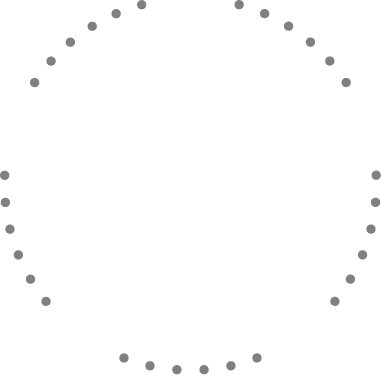
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Description automatically generated with medium confidenceSTEAM at a Glance

**Infographic**





**Mathematics**

The study and use of numbers and their operations to describe, measure, predict, and explain occurrences and relationships in the   
physical world.

**Arts**

Activities like dance, drama, film, literature, music, and visual arts that use skill and imagination to communicate an idea or an aspect of the human experience.

**Science**

A systematic way to collect and organize knowledge about the world through observation and experimentation.

**Engineering**

The use of science and mathematics to design and make things.

**Technology**

Any tool developed by a human to help solve a problem.



**What to do:** Review this infographic to get familiar with the five STEAM disciplines and the characteristics of STEAM education.

**Why it matters:** Seeing what’s possible can help you design engaging STEAM projects and activities that build students’ competence and confidence.

**STEAM**

An educational approach to learning that uses science, technology, engineering, the arts, and mathematics as access points for guiding student inquiry, dialogue, and critical thinking.

***Note:*** *This diagram shows the STEAM definition used by the Institute for Arts Integration and STEAM.*

|  |  |  |  |
| --- | --- | --- | --- |
| Four Characteristics of STEAM Education | | | |
| **Creative** | **Interdisciplinary** | **Experiential** | **Inquiry Based** |
| Tackles a real-world challenge or creates something that has value or meaning. | Includes content and skills from more than one field of knowledge. | Provides opportunities for active exploration (for example, through a makerspace). | Follows the design thinking process. |

Use of **design thinking + makerspace** is one of many possible models for STEAM education.

**Design thinking** is a five-step problem-solving process used by engineers and inventors:

1. **Empathize**: Conduct research to develop a deep understanding of the challenge you’re addressing and the audience for your solution.
2. **Define**: Clearly define and articulate the problem to be solved.
3. **Ideate**: Brainstorm creative ideas, then narrow down a few to test.
4. **Prototype**: Build a real-life representation (prototype) to test part or all of the solution.
5. **Test**: Engage in short-cycle testing of the prototype and use feedback and research to improve the product.

A **makerspace** is a collaborative environment designed to allow students to make, create, learn, invent, and share.

* **Making** began as a grassroots movement. Its focus on experiential learning inspires creativity, imagination, and inventiveness. At the heart of making are hands-on experiences that are student-driven, invite creative exploration of materials, and harness children’s love of play.
* **Makers**: These are the students who are working in the makerspace and performing the act of “making.” You, as the facilitator, are also a maker! You’re making a meaningful learning opportunity for your students.

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Description automatically generated with medium confidence**Facilitators of the *design thinking + makerspace* STEAM education model perform six tasks:**

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   Description automatically generated with medium confidenceConsider STEAM education variations and characteristics.
2. Activate the power of design thinking and makerspaces.
3. A black background with a black square

   Description automatically generated with medium confidencePlan to mitigate risks.
4. Choose your mission and implement your STEAM activity.
5. Ensure a smooth link to program goals by implementing the activity with fidelity.
6. Assess, reflect, and celebrate!

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