




# STEM, STEAM, STREAM

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# STEM

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vs

# Makerspace

- Text
- Challenge
- Test prototype
- Modification
- Reflection
- Can be teacher or student directed

- Personalized Projects
- Student Directed
- Learn and discover while creating and exploring

# Library of the Future, Makerspace, & STEAM Lab

What's the difference?

## Makerspace

A DIY space for exploration where people can gather to create, invent, & learn.



## Library of the Future

A space that is a cornerstone of creativity, a learning environment for individuals to gather research, & for teams of people to plan innovation through technological means.



## STEAM Lab

A place for teachers to lead pre-planned, guided content that integrates Science, Technology, Engineering, Arts & Math standards.



Adapted from: <https://educationcloset.com/2017/01/10/libraries-makerspaces-steam/>

# Future Ready → Vision 2020



**Digital Access** FUTURE READY PLEDGE

The Board of Directors and School Board members of the Escambia County School District, do hereby affirm our commitment of this district to work with students, educators, families, and members of our community to become Future Ready by engaging in a wide range of activities such as:

**Fostering/Leading a Culture of Digital Learning**  
Future Ready district leadership teams will use technology to help drive continuous improvement, become responsible, engaged, and cost-effective assessors of the district's technology infrastructure and develop a sustainable plan to ensure broadband's consistent connectivity and wireless access. Future Ready districts work with community partners to leverage local, state, and federal resources to support home Internet access outside of traditional school hours.

**Ensuring Professional Learning Opportunities**  
Future Ready districts will provide everyone with access to personalized learning opportunities and instructional materials and leaders the individual support they need, when they need it. Future Ready districts provide tools to help teachers effectively leverage learning data to make better instructional decisions.

**Accelerating Progress Toward Universal Access for All Students to Quality Devices and Quality Digital Content**  
Future Ready districts work with necessary stakeholders to support a robust infrastructure for managing and optimizing safe and effective use of devices for learning opportunities to be active learners, creating and sharing content, not just consuming it. Future Ready districts curate, create, and consistently improve digital materials and apps used in the support of learning. Future Ready districts use carefully selected high quality digital content that is aligned to college and career ready standards as an essential part of daily teaching and learning. Teachers are able to share, discover, and adapt openly-licensed materials and teaching plans.

**Ensuring Access to Help Students and Families**  
Future Ready districts make digital resources available that help access expanded college, career, and citizenship opportunities. Future Ready districts promote ways to leverage technology to expand equity through digital activities such as online application for Federal Student Aid (FAFSA) online, virtual counseling services, college scholarship search tools, and online advising access. Future Ready districts are committed to being among the nation in the world with the highest college completion rate by 2020.

**Monitoring Other Districts and Helping Them Transform**  
Future Ready districts work to design, implement, and share their technology plans. Future Ready districts join regional summits, participate in an online connected superintendent community of practice, and publish their Future Ready technology plan.

Adopted this 18th day of August, 2015

 Malcolm Thomas, Superintendent	 Patricia Hightower, Chair, District 4
 Bill Slayton, Vice Chair, District 5	 Carl Bergquist, District 1
 Donald W. Boone, District 2	 Lillian Moultrie, District 3

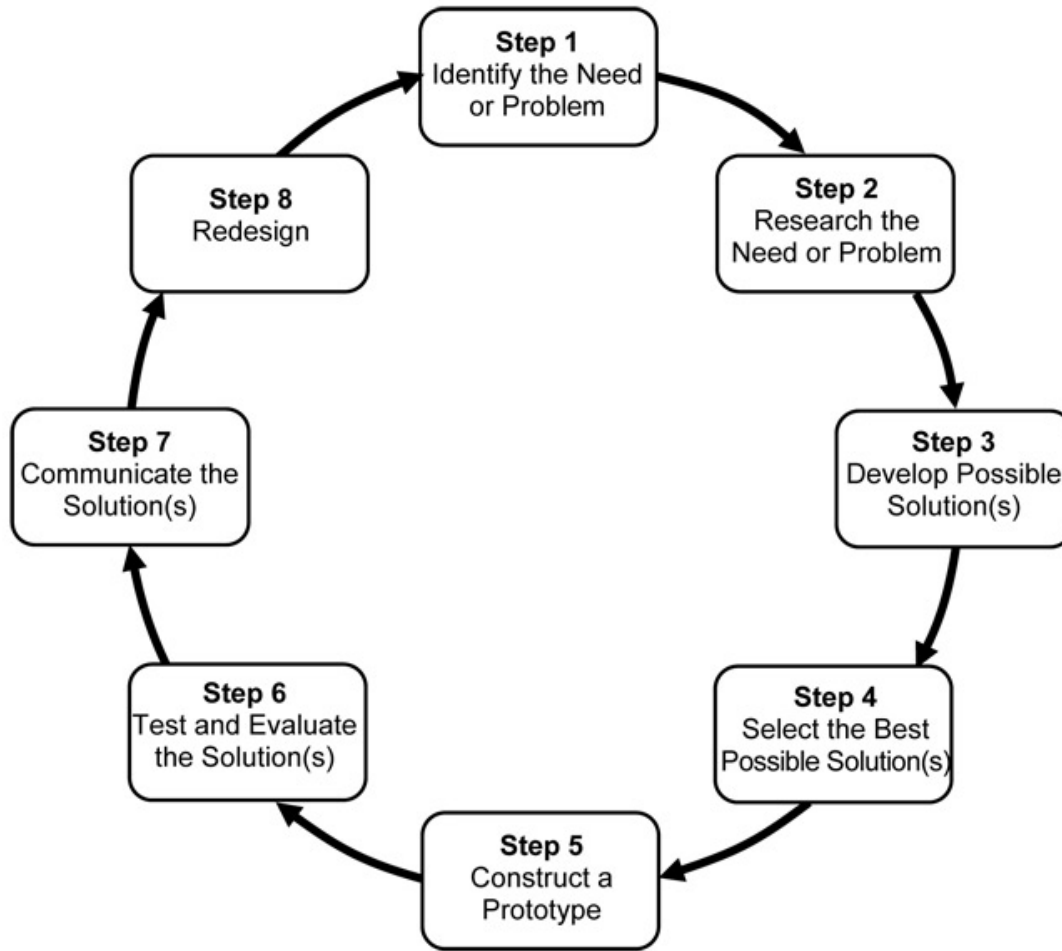
Personalized learning empowers students with voice and choice in the learning process. It is a student-centered approach that is facilitated by the teacher based on each learner's mastery of the standards. A personalized approach will take into account each learner's unique learning style, abilities, and interests. It is built on the premise that learning happens anywhere, anytime, and in flexible learning spaces.

# Innovation Centers!

# Problem Solving and Collaboration

- Collaborate with Faculty
  - Tie books to STEAM lessons
  - Provide space
  - Provide expertise for research
- Promote student problem solving
  - [Design model](#)
  - [Planning and Reflection](#)
- Promote student collaboration
  - [Teamwork](#) - everyone has a role and responsibility





Names:

**Project/Book Title STREAM Recording and Reflection Sheet**

1. Challenge:	2. Brainstorm / Plan: (Talk about how you will build the spinning top.)	3. Design / Create/ Build: Draw a model of your spinning top. 
4. Test: Did it work?	5. Reflect & Investigate (Think about how it can spin longer.)	6. Redesign/ Improve:

7. What did you discover? Think and discuss:

# The Dozen Cooperative Learning Roles



## Encourager

Encourage teammates to participate and do well.



## Praiser

Show appreciation for teammates' ideas and contributions.



## Cheerleader

Lead the team in celebrating individual or team accomplishments.



## Gatekeeper

Make sure everyone is participating about equally.



## Coach

Coach teammates on solving a problem.



## Question Commander

Check if any teammates have a question.



## Checker

Check to make sure everyone has learned the material.



## Focus Keeper

Keep the team focused on task.



## Recorder

Record the team's answers or ideas, or make sure they get recorded.



## Reflector

Lead the team in looking back on how well the team worked together.



## Quiet Captain

Keep the team's volume level down.



## Materials Monitor

Get and return team supplies. Leads the team clean-up.

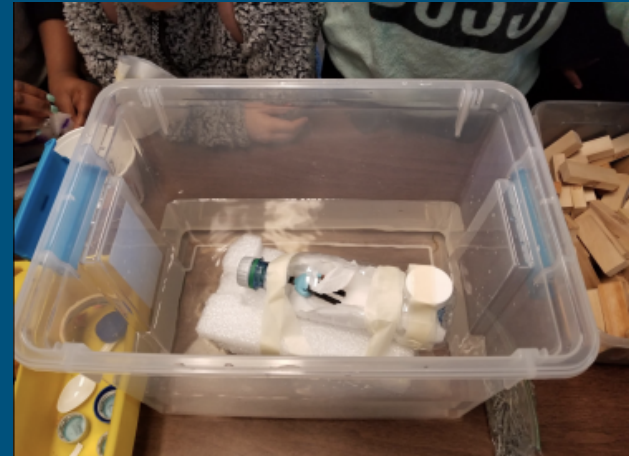


# Elementary Example

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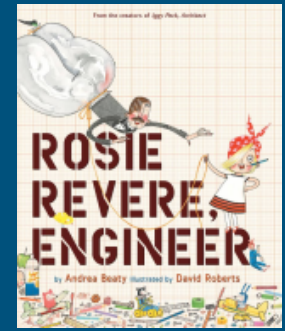


Where the Wild Things Are - create a boat that will float and hold the most weight.



# Elementary Example

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Rosie Revere, Engineer - create the tallest tower using only spaghetti, marshmallows and tape



# Elementary Example

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Iggy Peck, Architect - create a bridge using straws and tape that will hold the most weight



# Let's Work!

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Queen of the Falls - create a device that would protect an egg from a fall



Steps:

- [Use Planning Sheet](#) - complete steps 1-3
- Bring paper with completed steps 1-3 to get supplies
- 10 minutes to create container and test
- Complete reflection

Roles:

- Materials Monitor
- Recorder
- Reflector
- Focus/Time Keeper

Names:









**Project/Book Title STREAM Recording and Reflection Sheet**

<p>1. Challenge: Create a device that will protect an egg from a fall.</p>	<p>2. Brainstorm / Plan: (Talk about how you will build the protection device)</p>	<p>3. Design and Choose Materials:: Draw a model of your egg protection device using your chosen materials.</p>
<p>4. Build and Test: Did it work?</p>	<p>5. Reflect &amp; Investigate (Think about how it can spin longer.)</p>	<p>6. Redesign/ Improve:</p>

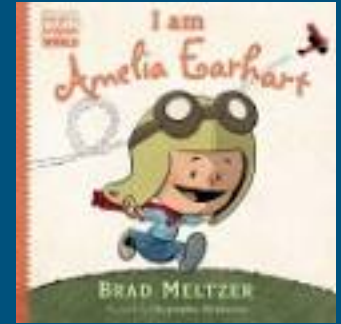
7. What did you discover? Think and discuss:

Look at the materials below pick what you would like to build your egg safety basket with and add them up to equal 20

*\*Use the materials carefully, as they will not be replaced if you damage them.\**

Material	Cost (\$)	Quantity	Cost
2 Paperclips 	2		
2 Straws 	2		
3 Cotton Balls 	3		
3 Pipe Cleaners 	3		
2 Rubber Bands 	5		
2 Sheets of Paper 	5		
1 Sandwich Bag 	5		
1 Sheet of Newspaper 	5		
<b>Total=</b>			

# Let's Work!

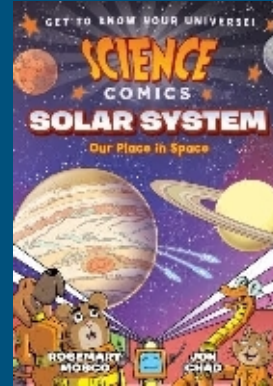
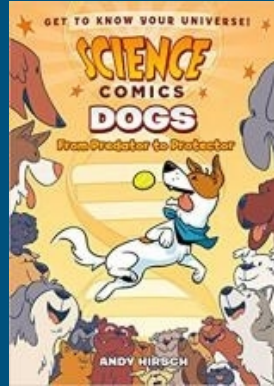
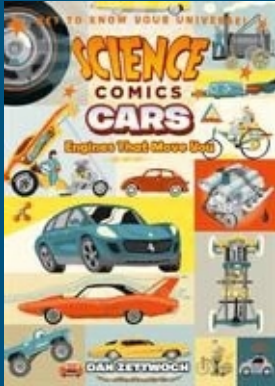


- I am Amelia Earhart – follow directions and make a glider
- Follow the directions, make a glider, test and record distance on the back
  - <https://sciencebob.com/the-incredible-hoop-glider/>
  - [https://sciencebob.com/wp-content/uploads/2015/02/Incredible\\_Hoop\\_Glider1.pdf](https://sciencebob.com/wp-content/uploads/2015/02/Incredible_Hoop_Glider1.pdf)
- Make at least 1 change to the design, test and record the results on the back
- Roles:
  - Builder
  - Recorder

# Faculty Collaborations in Middle School

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- Displaying literature to enhance classroom activities.



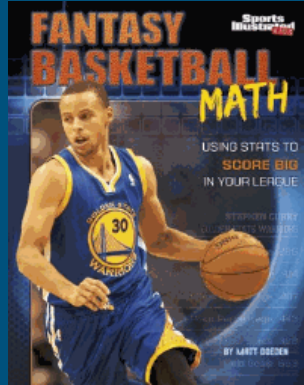
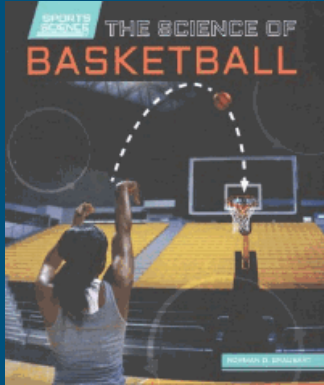


# Faculty Collaborations in Middle School

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- FAMILY MATH AND SCIENCE COLLABORATIONS
- COLLABORATION WITH PUBLIC LIBRARY

# REWARD ACTIVITIES FOR READING



**High Touch High Tech®**  
Science Experiences That Come To You

## Basketball STEM activity

### Supplies:

**\*\* makes 1 basketball hoop and 1 shooter \*\***

- Cardboard piece (3 x 4 inches)
- 2 x Chenille stems
- Nylon net fabric (10 x 10 inches)
- 6 x Jumbo craft sticks
- 6 x Regular craft sticks
- 1 x Dowel stick (6 inches long, 3/8 inch diameter)
- 3-4 feet Masking tape
- 1 x Large straw
- 1 x Cardboard tube
- 3-4 Rubber bands
- 1 x 3oz. or 6 oz. cup

[https://sciencemadefun.net/downloads/basketball\\_STEM.pdf](https://sciencemadefun.net/downloads/basketball_STEM.pdf)