"The difference between science and the arts is not that they are different sides of the same coin or even different parts of the same continuum, but rather, they are manifestations of the same thing. The arts and sciences are avatars of human creativity." – Mae Jemison, astronaut

"True innovation comes with combining the mind of a scientist or technologist with that of an artist or designer." – John Maeda, president, Rhode Island School of Design

STEM, an interdisciplinary approach to science, technology, engineering and math, has changed to STEAM in some school districts. The ‘A’ adds the arts to the other four disciplines (STEM + Art = STEAM). STEAM is one of the best vehicles we have to infuse creativity into the entire curriculum.

**Thoughts to Consider**

The arts provide multiple ways for gifted students to make sense of what they learn (knowledge and comprehension), use what they learn (application) and create something new based on what they learn (creative synthesis and evaluation).

Because the arts are hands-on, they allow students to show what they know through kinesthetic learning and authentic performance. Music, drama, painting, drawing, sculpture, graphic arts and digital design all use creative processes that students can use as they learn about science, engineering, math and technology.

**STEAM requires:**
- combining the knowledge and approaches learned in several subject areas
- the use of higher-order thinking
- the ability to do problem solving
- knowing how to work effectively in teams and groups
- integrating art and design into science, technology, engineering and math
- innovative thinking that combines the mind of a scientist or engineer with that of an artist or designer
- showing ways the arts and design, in concert with fields like science and technology, can bring about the global innovation needed in the 21st century.

Carolyn, who lives in Lilburn, Georgia, can present workshops for your school or school district. For more information, contact Peggy at 1-800-729-5137 or email her at peggy@piecesoflearning.com

~~GAGC Conference 2016~~
Transportation

Common Core Standards
Anchor Standard: Reading – Integration of Knowledge and Ideas
  7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively as well as in words.
Reading Standards for Informational Texts – Integration of Knowledge and Ideas (Grade 1)
  7. Use the illustrations and details in a text to describe its key ideas.
Anchor Standard: Speaking and Listening – Comprehension and Collaboration
  1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others’ ideas and expressing their own clearly and persuasively.

Background Activity
Using a variety of informational texts including picture books, pictures, videos, and other digital images, discuss various types of transportation. In this discussion, tell the different types of transportation you have used. Included might be (but should not be limited to) cars, trucks, scooters, bikes, boats, airplanes, trains, and buses.

SCAMPER Activity
Divide into groups of four. Each group needs a picture of one form of transportation such as those listed above. Each group should brainstorm creative answers to the SCAMPER questions. Each group should have a recorder. If necessary, do the SCAMPER activity orally with the teacher and the whole class. If it is done in a whole class format, repeat the SCAMPER activity several times using different forms of transportation.

Materials
Pictures of several different forms of transportation

Substitute
What could be used instead of this type of transportation that would be cheaper, faster, or more efficient? Could you substitute something else for one object on this type of transportation?

Combine
What two items could be combined to make one new item?

Adapt
How can this type of transportation be adapted so that it does not cause pollution or so that it moves faster?
Magnify/Minify
What on this type of transportation could be made larger? What could be made smaller?

Modify
What could be added to make it more comfortable for its passengers?

Put to other use
How else could this type of transportation be used besides getting people from one place to another?

Eliminate
What would happen if this type of transportation did not exist?

Rearrange/Reverse
What if this type of transportation could only run backward? How would you use it?

Concluding Activity
Each group will share and discuss their SCAMPER answers with the whole class. When all groups have finished sharing, each group will think about the SCAMPER answers and draw a picture or mural with a scene that shows:

1. A new version of their type of transportation
2. Other creative and original types of transportation

Each group will share and explain their picture or mural with the class.

Assessment Mini-Rubric for Concluding Activity

- Follows Group Work criteria card
- Follows Drawing or Mural criteria card
- Answers to each of the SCAMPER questions are logical, clear, and creative
- New and innovative versions of various types of transportation are shown visually
# Product Criteria Cards

<table>
<thead>
<tr>
<th>Brochure</th>
<th>Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pictures relate to topic</td>
<td>1. Items in logical and accurate order</td>
</tr>
<tr>
<td>2. Attractive and neat layout</td>
<td>2. Visually shows relationship between parts or ideas</td>
</tr>
<tr>
<td>3. Folded with information on each panel</td>
<td>3. Neat drawing and writing</td>
</tr>
<tr>
<td>4. Neat and clear writing highlighting important points</td>
<td>4. Object or process drawn accurately</td>
</tr>
<tr>
<td>5. Correct spelling</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chart</th>
<th>Diorama</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Has two or more sections divided by lines</td>
<td>1. Realistic depiction of scene</td>
</tr>
<tr>
<td>2. Title and subtitles</td>
<td>2. Sides have background scenery</td>
</tr>
<tr>
<td>3. Shows information clearly</td>
<td>3. 3-dimensional figures/objects in foreground</td>
</tr>
<tr>
<td></td>
<td>5. Accurate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comic Book/Comic Strip</th>
<th>Drawing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Frames in correct sequence</td>
<td>1. Pictures are clear and understandable</td>
</tr>
<tr>
<td>2. Tells story or idea through pictures</td>
<td>2. Neatly done</td>
</tr>
<tr>
<td>3. Characters/objects clearly drawn</td>
<td>3. Shows topic accurately</td>
</tr>
<tr>
<td>4. Clear writing with correct spelling</td>
<td>4. May use crayon, markers, pencil, pen, charcoal or other media</td>
</tr>
<tr>
<td>5. Humor</td>
<td></td>
</tr>
<tr>
<td>6. Original and creative</td>
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</table>

<table>
<thead>
<tr>
<th>Concept Map</th>
<th>Group Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Has major topic in center</td>
<td>1. Stays on topic</td>
</tr>
<tr>
<td>2. Shows details about the topic with lines and/or circles radiating from the center</td>
<td>2. Listens to others in group</td>
</tr>
<tr>
<td>3. Visually shows relationships of details or ideas to one another</td>
<td>3. Sets group goals</td>
</tr>
<tr>
<td>4. Neat and legible</td>
<td>4. Works to meet goals</td>
</tr>
<tr>
<td></td>
<td>5. Uses time wisely</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Crossword Puzzle</th>
<th>Mural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Each word intersects with another in at least one space</td>
<td>1. Hangs on a wall</td>
</tr>
<tr>
<td>2. Correct spelling</td>
<td>2. Is a rectangular shape at least 12&quot;x36&quot;</td>
</tr>
<tr>
<td>3. Accurate definitions indicating across and down</td>
<td>3. Shows several objects, people, and/or scenes</td>
</tr>
<tr>
<td>4. Neatly and clearly done</td>
<td>4. Colorful and neat</td>
</tr>
</tbody>
</table>
Tiered Lesson Plan: Graphs and Data

Objectives or Standards

1. Develop creativity and higher level thinking skills.
2. Collect and organize appropriate data.
3. Construct an accurate graph.
4. Analyze and interpret graphs.

Whole Class Activities

1. Brainstorm various ways one can collect and organize data. List on board or overhead.

2. Review parts of a graph. Demonstrate and illustrate different types of graphs and remind students how to construct different types of graphs.

3. Discuss the concept of "pleasing to the eye". Give examples and have students give or show examples from past assignments or their own classroom work.

4. Give Level 1 students homework to practice basic skills constructing graphs while Level 2 & 3 students gather data for their activities.

Level 1 Activities (Choose one)

1. Select a set of data already collected by the teacher. Organize the data. Construct a bar graph showing this data. Write five questions that could be answered by looking at your graph. Mount all materials on a 12"x18" sheet of construction paper.

2. Use statistics found in your social studies or science book to create a line graph. Organize the data. Write five questions that could be answered by looking at your graph. Mount all materials on a 12"x18" sheet of construction paper.

Assessment

- All participate in class discussion.
- All students listening and answering questions as needed.
- Class conclusions recorded on a "Pleasing to the Eye" poster or criteria card.
- Level 1: Shows accuracy in graphing skills.
- Levels 2 & 3: Gather data accurately.

Assessment for Both

- Follows Graph criteria card.
- Five appropriate, well-constructed questions.
- Correct spelling, punctuation and grammar.
- Data shown accurately.
- Visual is correct size.
- Is pleasing to the eye.

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Level 2 Activities (Choose one)

1. Choose a teacher-approved survey question. Conduct a survey gathering data from at least 25 different people. Organize the data. Construct a line or bar graph to show survey results. Explain results in a paragraph showing inferences and conclusions. Mount all materials on a 12"x18" sheet of construction paper.

2. Gather two sets of weather statistics from newspapers, TV or the internet. Organize this data and compare by constructing a double bar graph. Explain results in a paragraph drawing inferences and conclusions. Mount all materials on a 12"x18" sheet of construction paper.

Level 3 Activities (Choose one)

1. Use percentage statistics found on the Internet, in a newspaper, magazine or almanac to answer a question or support a main idea. Organize the data and show on a circle graph. Explain results in a 7-10 sentence paragraph analyzing the results drawing inferences and conclusions. Mount all materials on a 12"x18" sheet of construction paper.

2. Choose a teacher-approved survey question. Conduct a survey gathering data from 100 different people. Organize the data turning the statistics into percentages. Construct a circle graph to show survey results. Explain results in a 7-10 sentence paragraph analyzing results and drawing inferences and conclusions. Mount all materials on a 12"x18" sheet of construction paper.

Whole Class Culminating Activities

Share products from Levels 1, 2 and 3.

Assessment

- Data gathered accurately from 25 or more people.
- Has two sets of weather statistics from different sources.
- Follows Graph criteria card.
- Paragraph shows inferences and conclusions.
- Has correct spelling, grammar and punctuation.
- Visual is correct size.
- Is pleasing to the eye.

- Shows question.
- Shows resources.
- Shows statistics.

- Data gathered from 100 people.
- Percentages are accurate and reflect the data gathered.
- Follows Graph criteria card.
- Has 7-10 sentence paragraph with correct spelling, grammar and punctuation.
- Correctly analyzes data and shows inferences and conclusions.
- Visual is correct size and is pleasing to the eye.

- Group participation

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