



coleman
middle school

SCIENCE ▪ TECHNOLOGY ▪ ENGINEERING ▪ ARTS ▪ MATH

• **Georgia & Gwinnett's 1st Certified STEAM School** •

General Information about The Coleman Experience

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<https://www.gcpsk12.org/colemanms>

What is STEAM?

Many people have heard about STEM... which focuses on students learning and applying mathematics and science knowledge and skills to solve real-world problems in the classroom and through extracurricular opportunities. However, at Coleman Middle School we harness the power of STEAM, integrating the fine and performing arts as a key element in classroom learning. There are multiple connections between math, science, and fine arts, so this is a natural point of integration. STEAM education is about more than just the subjects in the name (Science, Technology, Engineering, Art, and Mathematics). Rather than teaching those subjects in a vacuum, Coleman's STEAM program blends them in inquiry-based, hands-on learning that more closely aligns with what students will experience in high school, college, and the workplace.

Why is there a need for this?

Our world is experiencing considerable job growth in STEM career areas, and that growth will remain robust for future generations. These jobs require more specialized skills and experience with the connected areas within STEM/STEAM. Based on today's economy and anticipated future opportunities, students need to have a better understanding of STEM knowledge and skills, so they are prepared to pursue high-skilled and well-paid careers in related fields.

How is Coleman Middle School be different from other GCPS middle schools?

Coleman Middle provides a different experience than a traditional middle school – we intentionally plan for the experience to look, sound, and feel differently to our students! Here are some cornerstones of the Coleman Experiences:

- Innovative classroom spaces, collaboration spaces, as well as science laboratories to engage students in the learning process
- A Humanities curriculum that integrates Language Arts and Social Studies each day to promote literacy through history, geography, economics, and religion
- Required fine arts (band, orchestra, dance, music technology, theater arts, visuals arts, Spanish) for all students
- Quarterly Problem-Based Learning Units that integrate all core areas and the arts to allow students to investigate real world problems and showcase potential solutions
- Mobile makerspaces to assist students during the building stages of the Engineering Design Process
- A dance studio, music technology lab, and a biodome featuring aquaponics and hydroponic systems to provide hands-on experiences

What is project/problem-based learning?

It seems to be mentioned often with STEAM...Project/problem-based learning (PBL) is an instructional approach that has a major product or project at the center. Generally, students learn knowledge to tackle realistic problems, providing students with more control over their learning and allowing students to work collaboratively in pairs or

groups. This type of instruction is associated with STEAM because it focuses on students demonstrating knowledge and skills in a real-world context, which helps students answer the question, "Why am I learning this?" Through PBL, STEAM instruction tackles real-world problems and challenges often connected to the students' community. For example, students won't just learn about cities... they will build one from the ground up, integrating all of the subjects learned in school-- from the mathematics of engineering bridges to the art of designing objects that will go in their cities. Most importantly, students are required to communicate the reasons for the choices that make through the process.

At Coleman, students are engaged in a PBL unit each quarter. The PBL unit is launched at the beginning of the quarter when students learn of the driving question and the real-world problem. Throughout the quarter, students investigate the real-world problem in each core content class and develop a solution using the Engineering Design Process. At the end of the quarter, all students must present their final product, as well as their process, at a public showcase.

Here are some example driving questions from previous PBL units:

- How can we as CMS Students demonstrate how to solve food challenges in our local and global communities?
- How can we as water resource engineers develop innovative techniques to address environmental concerns plaguing the Great Barrier Reef?
- How can we use genetics to design a community on Mars?
- How can we design a pedestrian bridge that meets the needs of the Duluth community?
- How do we use science to save the falsely accused?
- How can we proactively mitigate the honey bee population?

How do I stay connected with Coleman?

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