Essential Ingredients for Growing a STEM School

Tony Stanfill, Principal
Adairsville Middle School
Bartow County
• Bartow County, located in northwest GA
• Border Cobb, Cherokee, Gordon, and Floyd
• 1 of 4 MS in Bartow
• 780 to 830 students
• Title I with approximately 58% F/R lunch
• I started as principal in ‘17—’18 school year and have been here 3 years.
• CCRPI is usually in low 70s due to Gaps and our Progress (Growth) outscores Mastery substantially but Mastery is on the rise.
Contacted Dr. Sally Creel, the District STEM coordinator from Cobb County, about where to start and number of Walks per 9 weeks

Took a four person team to Elm Street Elementary School (Rome) in Sept. 2017

Science Night in November 2017 (Title I Parent Night)

Opened Project Labs on every grade level hall—January 2018. Engagement is my “tight”

Awarded *Learning Blade Grant* for STEM careers in January. Since awarded two 3-D printers because of program usage

Began after school STEM Enrichment program—February to April

Piloted PBLs in all grade levels the 4th nine weeks with support from the Curriculum Team

Expressed interest with my administrative team in becoming a STEM school in July of 2018 after attending Cobb’s STEMapalooza
WHY STEM?

- STEM careers will grow by adding 77,000 new jobs between now and 2026.
- Biggest areas of growth: software developers, nurses, computer customer support, EMTs.
- More than half of the job growth in GA between now and 2026 will be in the healthcare and film industry.
The 4Cs…plus one
• Communication
• Collaboration
• Critical Thinking
• Creativity
• *Community (AMS)
• Simple put it is BEST Practices

WHAT IS STEM?
Q & A
Volunteered to be one of two schools in Bartow (the other was one of our feeder ELM) to seek STEM Certification which fell in line with new Superintendent’s vision.

Met with 6th grade teachers and Dr. Sally Creel on first day of pre-planning to let them know they’d be the first group and our Innovative Focus would be on Special Education and STEM for ALL students (not Program Certification)

3 year goal: 6th 2018—2019, 6th & 7th 2019—2020, All grades 2020-2021. Slow pace, with PD along the way in order to not overwhelm. Felt it was important to start with 6th to lay foundation and build off feeder Elm. Schools.

Collaborative Planning:

  1st Nine Weeks—Tuesday ELA/SS and Thursday Math/SC
  2nd Nine Weeks—Tuesday STEM and Thursday ELA/SS/Math/SC

**STEM planning involved ILT and principal (THIS IS A MUST)

**Start with a SC STANDARD! Will save you time; we learned later!

First STEM Walk: November 16, 2018

Second STEM Walk: February 22, 2019

Third STEM Walk: May 16, 2019

Began “branding” and using STEM terminology
• Visited two Cobb County schools for STEM Walks; took different teachers each time during ‘18—’19 school year. Now, every teacher in the building has been on a STEM walk. Important: send ELA and SS teachers. [http://www.stemcobb.com/stem-visits.html](http://www.stemcobb.com/stem-visits.html)
• Sent two Science teachers to West GA RESA STEM Conference ‘18
• Enrolled two teachers in *Cobb’s STEM Academy* in ’18/’19 and three in ’19/’20. Hope to send three in ‘20/’21 (*Math, SC and ELA.)*
• Mrs. Callaway presented for Learning Blade at STEM Conference in Athens ’18.
• Sent a 7th Math, SC and myself to state STEM conf. this year ‘19.
• All Prof. Development was funded through Title I (written in plan.)
ELA End of Grade Scores increased by 10% (66% to 76%)

Math End of Grade Scores increased by 2% (79% to 81%)

5% increase in students reading on grade level (58% to 63%)

District goal for 2018-2019 was 38.2% IIs & IVs in ELA (goal of 2% increase); AMS 6th grade ELA was 52% and AMS was 46%
Examples of PBLs/Thematic Units:

PBL 1: Erosion
PBL 2: Under the Sea
Math

• Students have been learning how to use the Spheros and how rate and time affect distance (which is the backbone to coding as Sphero).

• Students will be block coding Spheros and testing their codes to tell about the cycle of a plant (of their choice) planted in the gardens at AMS.

• Each group is required to have 6 stops and 3 turns for their Sphero.

RATE AND TIME

Building greenhouses in Minecraft as a way to hook students and build excitement for upcoming STEM unit. Students had to come up with a way to use vertical space and a way to water their greenhouse.

Please vote for your favorite greenhouse outside Ms. Ridley’s room.
• Students will be showcasing their solar oven projects to the class.

• Students chose a visual presentation method for their projects and you may even see actual solar ovens!

• Upon completion of the presentations, students will be writing a reflection piece on their solar oven experience, variables that affected their ovens and how they would make improvements on their oven.

Example 1: Sustainability

SOLAR OVENS

Students created a prototype of their solar oven using Minecraft

Attitude towards Math/Science - effect size of .36
Concentration, persistence, engagement - effect size of .48
Social Studies

URBAN GARDEN TIMELINE

March 22: Seeds in Pods and put into greenhouse
April 10: Tire Gardens
April 17: Transplant pods into Larger Containers
April 22/23: Paint and Stain Pallets
April 30-May 3: Construct Vertical Gardens & Raised Beds

Urban Agriculture
Students will be participating in a gallery walk sharing their STEM documentation project. Students were given the opportunity to document their progress of STEM in all of their classes - this includes Science, Math, and Social Studies.

Students will be critiquing other students' projects and providing feedback.

- Ms. Hook's Room: Documentary showcase
- Ms. Szweda Room: Infographic/Newsletter showcase (Minilesson by Bunce on Piktochart)
- Mrs. Wilson's Room: Visual Showcase

Students will give feedback, on several projects in each of the classrooms. Students will use the evaluation forms they receive to reflect on their showcase and plan improvement steps based on feedback from peers.

Example 1: Sustainability

Students worked on a STEM text set in NewsELA and topics included sustainability, urban gardens, and coding.
Students will be working on Minecraft EDU in the “Sea Monument” world.

Each student will be in their own Minecraft world working to determine area and volume of ocean monuments.

Early finishers will construct their own guyots on the ocean floor and determine their volume. They will also create their own sea creatures and determine volume and area.

Students will be given the opportunity to complete an alternative assignment using LEGOS if they do not want to use Minecraft or do not have access to a computer.

Legos and Minecraft in a previous assignment in “Area World”
• Students will be building their ocean floor after learning and researching the topography of the ocean.

• Students can either build their ocean floor based off of their Minecraft Aquatic World, which they previously explored, or they can physically construct their ocean floor with consumables.
After the STEM Explorer project, students will be completing enrichment activities related to their project.

They will use classtools.net for two of the enrichment activities. Students will also be given the choice to complete a “Message in a Bottle” letter where their explorer will write a letter explaining their journey to loved ones at home.

Please visit the Project Lab to see the STEM Explorer Projects. Also, check out 6th grade Gifted Sphero video outside Ms. Szweda’s room.

Boats will be floated in the creek next Tuesday!
Students will be engaged in a Socratic Seminar discussing controversial issues surrounding the *Titanic*.

Each student will be participating in two Seminar discussions.

Students who are not participating in the current seminar will be observing a student that is participating and filling out an observation sheet.
• After researching, *JUST DO IT!* It will be messy and there will be challenges, but it’s worth it—look at the DATA!

• Reward teachers for trying new things THAT ENGAGE kids. We all learn more from mistakes than sitting in perfect rows!

• Allow them to be flexible with the pacing guide. As long as they’re covering all the standards, let them know it’s okay to go out of order (for the subjects which are able.) This helps develop PBLs and let 8th grade use a “word” instead of theme because their content is so specific (see pic. on next slide.)

• Be supportive and be at EVERY STEM planning meeting.

• Create the STEM Walk Agendas and schedules.

• Say “YES” and help them find resources/partnerships.
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<thead>
<tr>
<th></th>
<th>1st 9 Weeks</th>
<th>2nd 9 Weeks</th>
<th>3rd 9 Weeks</th>
<th>4th 9 Weeks</th>
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<td><strong>Science</strong></td>
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<td>Cells &amp; Cellular Processes</td>
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<td>Genetics / Human Body</td>
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<td>Infectious Diseases</td>
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<td>Forensics - Crime lab</td>
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<td><strong>ELA</strong></td>
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<td>Literary Elements</td>
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<td>Constructed Response (Citing Evidence)</td>
<td>Explainatory Writing</td>
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<td>Drama &amp; Poetry</td>
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Welcome to Adairsville Middle School!

We are excited to hear your feedback and opinions on how STEM is evolving at our school. Please feel free to ask questions of teachers and students as you walk around to different classes.

**STEM Schedule**

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<tr>
<th>Time</th>
<th>Activity</th>
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<tr>
<td>8:00</td>
<td>Overview, Refreshments, Schedule</td>
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<td>8:30</td>
<td><strong>TEAM 1</strong>: Ridley/Math (Rm 109)</td>
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<td>Maddox/Science (Rm 110/111)</td>
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<td>Elrod/Social Studies (Rm 112)</td>
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<td></td>
<td>Szweda/ELA (Rm 113)</td>
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<td>9:40</td>
<td>Class Change, Project Lab Tour, Break, Debrief</td>
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<td>9:50</td>
<td><strong>TEAM 2</strong>: Hooks/ELA (Rm 124)</td>
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<td>Dulaney/Math (Rm 118)</td>
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<td>Dysart/Science (Rm 117)</td>
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<td>Wilson/ELA (Rm 114)</td>
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<td>McGuire/Social (Rm 115)</td>
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<td>10:45</td>
<td>Visit to Tiger's Den School Store</td>
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<td>11:00</td>
<td>Reconvene to debrief with administrative team and select 6th grade teachers.</td>
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SPONSORS!

- Bo’s Pallets
- C&C Gutters
- Belwood Nursery
- Adairsville High School
- Adairsville High School FFA
- Jason Henderson, local farmer
- Community/Parents/PIT Crew
- Bartow County Waste Department
- Bartow County Transportation Department
- Titus Steel
- Clear Creek Elementary
- Caliber Construction
- Calhoun Walmart:
  - Teacher Resource Center
- Kona Ice
- Ace Hardware
- AMS PIT CREW

Pleasant Olive Baptist Church
Leading: Partnerships

• Attend Chamber, Rotary, City Council Meetings and tell your STEM story as often as possible.

• If you get contact info., use it soon after initial meeting.

• Invite partners to your STEM Walks. Often times they ask, “How can I help,” and I say, “I’m not 100% sure, so come visit and see.”

• Once you establish a partnership, go visit them during the summer.

• Hold your Local School Council meetings on your STEM Walk days (two birds with one stone and it leads to more understanding.)

• Involve your PTO. They hang all the student work for the teachers or can be guest speakers.

• Give them STEM swag when they visit.

• Invite Central Office and Board Members on Walks.

• This is one of our main jobs to get support and supplies.
Check out our STEM progress
https://tinyurl.com/AMSTigersSTEM

AMS webpage:
https://adairsvillemiddle.bartow.k12.ga.us/apps/pages/index.jsp?uREC_ID=1638031&type=d&pREC_ID=1779746

Contact Info:  tony.Stanfill@bartow.k12.ga.us
770-606-5842 Ext. 7510

Join AMS STEM on Schoology for all resources:
6M6NX-9DJNW