We can change this...
74% of middle school girls express an interest in engineering, science and math ...
But only 0.3% choose computer science as a major when they get to college.
According to girlswhocode.org

STEAM will focus on process, design and discovery.

The STEAM program is not a replacement for daily science instruction taught through the regular classroom, which is critical in providing the students opportunities to advance their academic vocabulary and critical reading, writing and speaking skills.

Students will continue to compete in their school’s Science Olympics.
Q: What are the benefits of STEAM?
A: Ultimately, STEAM education provides a foundation that leads to career pathways and possibly industry certifications while in high school. What we are doing today will most certainly help your child as they advance through high school, college and career training. STEAM fuels innovation and creativity and improves collaboration.

Q: When will STEAM be implemented into MPS classrooms?
A: Beginning in the fall of 2019, STEAM will be implemented at all 25 elementary school sites for K-6 grade students with all of our approximately 12,000 served. Junior high school students will receive STEAM education in 2020-2021 school year. All MPS high school students are currently offered STEAM electives through a collaboration of Moore Public Schools and Oklahoma Career and Technology Education. Beginning in school year 2021-2022, each of the three high schools will refine course selections to focus on STEAM electives and career pathways.

Additional information: Implementing STEAM education and Project Lead The Way (PLTW) curriculum at our elementary schools will provide them opportunities to develop interest areas and pathways with increased education and training in BioMed, Computer Science and Pre-Engineering through high school. Note: ACT now includes STEM score on overall test scores for districts and universities.

Q: How will the STEAM initiative impact preAP, AP course access?
A: Parents and students will continue to have the option to choose between regular, Pre-AP and AP courses.

Q: How are STEM and STEAM different?
A: STEAM offers an art component that we believe is crucial to our students’ learning process.

Q: How will elementary students be identified as gifted?
A: Students will continue to take the CogAt assessment in second grade for gifted identification. In addition, we will also begin testing students using the CogAt in the fall of their eighth grade year, so that appropriate choices can be made for high school enrollments. Parents will continue to be notified if their student is identified as gifted. Additionally, CogAt results will assist STEAM instructors in grouping gifted students based on their abilities to maximize their STEAM experience.

Q: How will gifted students be served in the elementary classroom?
A: Through the differentiated instruction that STEAM education and PLTW curriculum provide, students will continue to be grouped based on ability and student interests. The project based format of the curriculum will allow students to delve as deeply into the curriculum as their abilities and interests allow. There will be increased professional development offerings for all teachers in gifted and talented educational practices. There will also be enrichment academies, established avenues of communication with parents, as well as increased opportunities and resources for parents to be involved in their child’s education.

The Gifted Parent Committee: The duties of the advisory committee will be to assist district officials with setting goals for the MPS gifted education program to ensure success for all students served.

Q: What is the funding breakdown and plans moving forward?
A: MPS received $4.5 million in state and federal funds for gifted education, but spent $4.8 million (to include SEARCH, Pre-AP, AP) on educator salaries, through grade 12. The additional expenses not covered by state and federal funds were paid from MPS general funds. Funds are given to school districts based on gifted student counts and are to be used for enhancement and enrichment opportunities, “not at the exclusion of other students,” per federal law. Current year funding for gifted education will continue to fund the 2018-2019 program. MPS will continue to allocate funds toward gifted programs and additional dollars to implement STEAM, with an additional investment for 2019-2020 at approximately $1 million. Funding for gifted programs are not intended to exclude students not identified as gifted, but to increase educational opportunities and provide continued learning. The district will continue to receive state and federal funding for gifted education.

Q: What curriculum will be used to implement STEAM?
A: Project Lead The Way (PLTW) is a national award winning curriculum that will provide the pathway for STEAM in our classrooms. Watch this video for more information: https://www.youtube.com/watch?v=al65aeTBKNE&feature=youtu.be
Benefits of STEAM and PLTW

- Aligned STEAM curriculum K-12th grade that lead to post secondary pathways aligned with job market demand.
- More teaching time for the regular classroom teacher.
- Better student engagement resulting in better attendance and achievement – raises ACT and lowers drop out rate.
- Keeps MPS students competitive with students from other districts with established K-12 STEM programs.
- Sparks the love for science, engineering and mathematics and exposes students to a wider variety of career options.
Implementation of STEAM education through the pathway of Project Lead the Way curriculum is aligned to state's standards and follows ICAP.

Q: What is an Individual Career Academic Plan (ICAP)?
A: The ICAP refers to a process that helps students engage in academic and career development activities and a product that is created and maintained for students' academic, career and personal advancement. It is required by the Oklahoma Department of Education, school year 2019-2020.

Q: The ICAP is a student-driven, ongoing process that actively engages students. But what is it intended to enable students to accomplish?
A: The ICAP is intended to help students understand their own interests, strengths, values and learning styles. It will help them create a vision of their future, develop individual goals, and prepare a personal plan for achieving their vision and goals.

With ICAP, the plan is intended to be dynamic and flexible, reflecting the students’ coursework, learning and assessment results; students’ post-secondary plans, aligned with their career, academic and personal/social goals and financial reality; and students’ records of college- and career-readiness.

KINDERGARTEN
Structure and Function, Exploring Design: Students discover the design process, identify products around them designed by engineers, and use what they’ve learned to design their own paintbrushes.
Pushes and Pulls: Students investigate different pushes and pulls and apply what they know to a swing set-installation project.
Structure and Function, Human Body: Students explore the relationship between structure and function in the human body and design a cast.
Animals and Algorithms: Students explore the ways people control and use technology, as well as program their own digital animations.

FIRST GRADE
Light and Sound: Students investigate light and sound and design a tool to communicate over a distance.
Light - Observing the Sun, Moon, and Stars: Students build upon their knowledge of light and design a playground structure that protects students from UV radiation.
Animal Adaptations: Students learn about animal adaptations and apply what they’ve learned to design a shoe made for desert exploration.
Animated Storytelling: Students build computational-thinking skills by creating animations based on their own short stories.

SECOND GRADE
Materials Science, Properties of Matter: Students explore materials science and devise a way to keep popsicles cold without a cooler.

Materials Science, Form and Function: Students research the variety of ways animals disperse seeds and pollinate plants and use what they know to design a gardening device.

The Changing Earth: Students explore how the surface of the Earth is always changing and design solutions for a fictional community threatened by a landslide.

Grids and Game: Students learn about the sequence and structure required in computer programs and work in teams to build tablet games.

THIRD GRADE
Stability and Motion, Science of Flight: Students learn about the forces involved in flight and design a solution to deliver aid supplies via an aircraft.
Stability and Motion, Forces and Interactions: Students explore simple machines such as wheel and axles, levers, the inclined plane, and more and then use what they know to rescue a trapped zoo animal.
Variation of Traits: Students investigate the differences between inherited genetic traits and traits that are learned or influenced by the environment and then model how the gene for a plant's stem color is passed on.
Programming Patterns: Students discover the power of modularity and abstraction and then use what they know to create a video game for a tablet.

FOURTH GRADE
Energy, Collisions: Students investigate how mechanisms change energy by transferring direction, speed, type of movement, and force and then use what they know to design a car safety belt.
Energy, Conversion: Students learn how energy can be converted to meet a human need or want and then develop solutions to move donated food from a truck to a food pantry.
Input/Output, Computer Systems: Students explore how computers work and create a reaction-time computer program to assess a baseline before a concussion occurs.
Input/Output, Human Brain: Students learn about stimuli and responses and then use what they know to create a video to teach children about concussions.

FIFTH & SIXTH GRADES
Robotics and Automation: Students explore the ways robots are used in today's world and then design a mobile robot that can remove hazardous materials from a disaster site.
Robotics and Automation, Challenge: Students explore mechanical design and computer programming and design an automatic-guided vehicle to deliver supplies in a hospital.
Infection, Detection: Students explore the transmission of infection and run an experiment to help find ways to prevent the spread of illness.
Infection, Modeling and Simulation: Students investigate models and simulations and apply their knowledge to program a model that simulates the spread of infections.
**Increasing demand for STEM jobs**

Out of 100 STEM occupations, 93% had wages above the national average. The national average for STEM job annual salaries is $87,570, where the national average for non-STEM occupations is roughly half at $45,700.

*According to Bureau of Labor Statistics*

Between 2017 and 2027, STEM jobs will grow 13 percent, with positions in computing, engineering and advanced manufacturing leading the way.

*According to Change the Equation*

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*We can change this…*

Only 36% of all high school graduates are prepared to take a college-level science course.

*According to National Math & Science Initiative*

Even though women earn 57% of all bachelor degrees, only 18% of undergrad computer science degrees go to females.

*According to National Center for Education Statistics*
FALL 2018

INTRODUCE STEAM education and Project Lead the Way (PLTW) curriculum.
• Meeting with Elementary Principals
• Meeting with SEARCH Teachers
• Letter to Parents
• Announcement to Community
• Presentation at November Board meeting

WINTER 2018/19

PREPARE for implementation of STEAM education and PLTW curriculum.
• Work with Parent Committee in development of gifted and talented enrichment activities
• Selection of STEAM Teachers
• Professional Development for Teachers
• Training the trainers

SPRING 2019

PREPARE for implementation of STEAM education and Project Lead the Way (PLTW) curriculum.
• Ongoing Professional Development training for Teachers
• Training for all staff

FALL 2019

IMPLEMENT STEAM education and Project Lead the Way (PLTW) curriculum in all 25 MPS elementary schools.
• Professional Development for Teachers
• Update to Board of Education
Moore Public Schools

STEAM AND PLTW

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