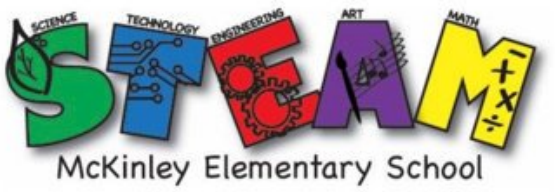

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Pillars of STEAM, it's not what we teach, it's HOW we teach!

Shared common experiences

- How do we create lessons where students are sharing similar experiences in pairs, teams or small groups?
    - Examples like: "Wonder wanders", engineering challenges, book explores or outdoor observations (Outside, inside, edge and up close).

Teacher questioning

- How do we plan and prepare explicit questions that are more open-ended and encourage deeper thinking and analysis?
    - Examples: Student questions like "I notice...I wonder…", Teacher questioning that allows multiple answers or student input.

Student questions

- Where and when do we invite students to build, record and investigate their own questions?
    - STEAM teaching and learning is about shifting instruction to encourage students to explore, investigate, ask questions and find their own answers.

Engagement

- How do we recognize when our students are engaged in their learning with interest, curiosity and wonder?
    - What are key observations that kids are engaged in their learning?

Compliance ⟶ ***Curiosity***

Journals/notebooks

- What do we need to do to explicitly plan for using journals/notebooks in our teaching? How should we assess them to measure student academic progress?
    - STEAM literacy & STEAM fluency focus on reading, writing and communicating using the language and vocabulary of multiple subjects, however growth of literacy must be based on ***STEAM Experiences.***
    - Scientific drawing/diagraming, naming and labeling, recording observations and writing explanations of thinking can be practiced in many subject area lessons.

Finding & making connections

- What does it mean to “think deeply” or “critically”? It’s essential that students learn how to transfer knowledge among multiple content areas to see the interrelationships with subject content fields

- How do we get our students making connections between the lessons we teach and what we hope they learn, and apply the knowledge to their own lives?
    - **S**cientific thinking involves asking questions, using evidence to support answers and sharing with others what was learned.
    - **T**echnology can be any tool that is important to solve problems, such as a meter stick to measure length, specific brushes for watercolor painting, key apps for recording video or photograph editing or coding new apps.
    - **E**ngineering is a means of identifying problems and designing solutions, such as asking students to solve to problem of how to minimize waste from classroom snacks or create a 3D/moving poster display of what they learned researching Native American tribes here in Minnesota.
    - **A**rt is the application of human creativity. When we design lessons where students can create something unique, based on the constraints and specific learning targets, they are practicing skills in imagination, synthesis and creativity.
    - **M**athematics is an application and use of quantifiable information, data collection and analysis, and most importantly pattern analysis. The human brain and hardwired to observe, recognize and interpret patterns in the world around us. Students need multiple opportunities to practice pattern analysis in order to improve their accuracy.