STEAM Update

Alignment to District Goals

Strategic Plan Goal 1: Every student will be prepared for high school and 21st Century citizenship.

- **Desired Outcome:** Elementary science curriculum that supports inquiry
- **Action:** Adopt Next Generation Science Standards

Board Goal 3: Demonstrate a clear focus on implementing the new science standards and supporting STEM/RTI programs at all sites**.**

Mountain View Whisman School District

STEAM

Background

2016-17 RTI pilot

- Literacy Model: Castro, Landels, Monta Loma, Theuerkauf
- Science Model: Bubb

2017-18 and 2018-19 RTI at all sites

- Literacy Model: Castro, Landels, Mistral, Monta Loma, Theuerkauf
- Science Model: Bubb, Huff, Stevenson

2019-20

- All sites moved to the Science Model

STEAM RTI Model

- STEAM teachers focus on NGSS through hands-on, inquiry based lessons during RTI/STEAM time
- Classroom or grade level teachers provide small group support or enrichment during RTI time
- Classroom teachers integrate NGSS topics learned during STEAM time into literacy instruction with support from Science is Elementary (SIE) coaches
- All students engage in STEAM and RTI at least two times per week

Developing STEAM Program

Developing the STEAM Program

Summer 2019: Scope and Sequence
- Developed by a team of STEAM teachers and principals (STEAM team)
- Outlines the year long plan for science instruction grades K-5
- Trimester 1: Physical Science
- Trimester 2: Earth Science
- Trimester 3: Life Science

Summer 2019: Lesson Development
- STEAM team developed lessons based on FOSS materials and those already developed by team from Bubb Elementary
- Lesson plans were linked to scope and sequence

Ongoing:
- The STEAM team updates the scope and sequence with additional lesson plans, links to resources, anchor phenomena, cross-cutting concepts etc as they are developed

STEAM Lessons

STEAM team made the following agreements:

- Lessons would be anchored in phenomena
- Lessons would be focused on the 5E Model:
  - Engage- pique student interest and get them personally involved in the lesson
  - Explore - get students involved in the topic; providing them with a chance to build their own understanding.
  - Explain - provide students with an opportunity to communicate what they have learned so far and figure out what it means
  - Extend - allow students to use their new knowledge and continue to explore its implications
  - Evaluate - students and teachers to determine how much learning and understanding has taken place.
- Lessons would be captured in student science notebooks

STEAM Lessons

- Lessons would include all components of STEAM
  - **S**cience at the heart of each lesson
  - **T**echnology to regularly engage in learning
  - **E**ngineering practices included in all grade levels
  - **A**rt woven in through projects and notebook sketches
  - **M**ath embedded in data analysis and scientific discovery

Additional STEAM Resources

Discovery Education Experience and STEM Connect for all teachers

- **Discovery Experience:** Online curriculum resources, on-demand teaching strategies, real world content in all subject areas
- **STEM Connect:** Online interdisciplinary K-8 resource that enhances core curriculum

MVEF

- Contributed $20,000 for professional development and $1500 per elementary school to spend on supplies for each STEAM classroom

Professional Learning

Professional Learning - Administrators

August 2019: Science is Elementary

- Overview of NGSS
- Integrating NGSS concepts into literacy instruction

September 2019: Discovery Education

- Hands-on investigations,
- Overview of the shifts in NGSS
- Disciplinary Core Ideas (DCIs)
- Cross Cutting Concepts (CCCs)
- Science and Engineering Practices (SEPs)
- Job embedded coaching (5 days throughout the year)

Professional Learning - STEAM teachers

Discovery Education

- **August 2019:** Transitioning to NGSS-Aligned Instruction:
- **October 2019:** A Deeper Dive into NGSS-Aligned Instruction
- **February 2020:** Planning and Assessing for Three-Dimensional Learning
- Job embedded coaching (18 days throughout the year)

Monthly STEAM meetings

- Best practices and expectations
- Phenomena and Inquiry
- Standards progressions
- Science and Engineering Practices
- Creating a storyline through the three dimensions of learning
- Opportunities for teachers to share highlights and best practices

Professional Learning - Classroom Teachers

Science is Elementary (SIE)

August 2019: Overview of NGSS and Integrating NGSS concepts into literacy instruction

Ongoing: 6 grade level/science teacher collaboration meetings facilitated by Science is Elementary

- Meetings take place during collaboration time on Thursday afternoons
- SIE provides grade level span coaches to support teams in designing literacy activities that will support student learning
  - Examples of integrated activities:
    - Writing about science
    - Using the science vocabulary in a speaking/listening activity
    - Utilizing cross-cutting concepts (patterns, cause and effect, etc) to make comparisons between reading topics and science topics

Current

- All students receiving STEAM instruction two times per week
- Students have completed Physical Science units and are learning about Earth Science
- Classroom teachers have participated in half (3) of the collaboration/coaching sessions with SIE
- STEAM teachers have had two professional learning sessions and 2 coaching rounds from Discovery Education
- Administrators have had 2 days of coaching from Discovery Education

STEAM in Action

Grade 2

Creating a mind map in order to better understand how concepts about objects, including properties, fit together

Grade 4

Presenting a potential model for a phenomena involving Newton's cradle

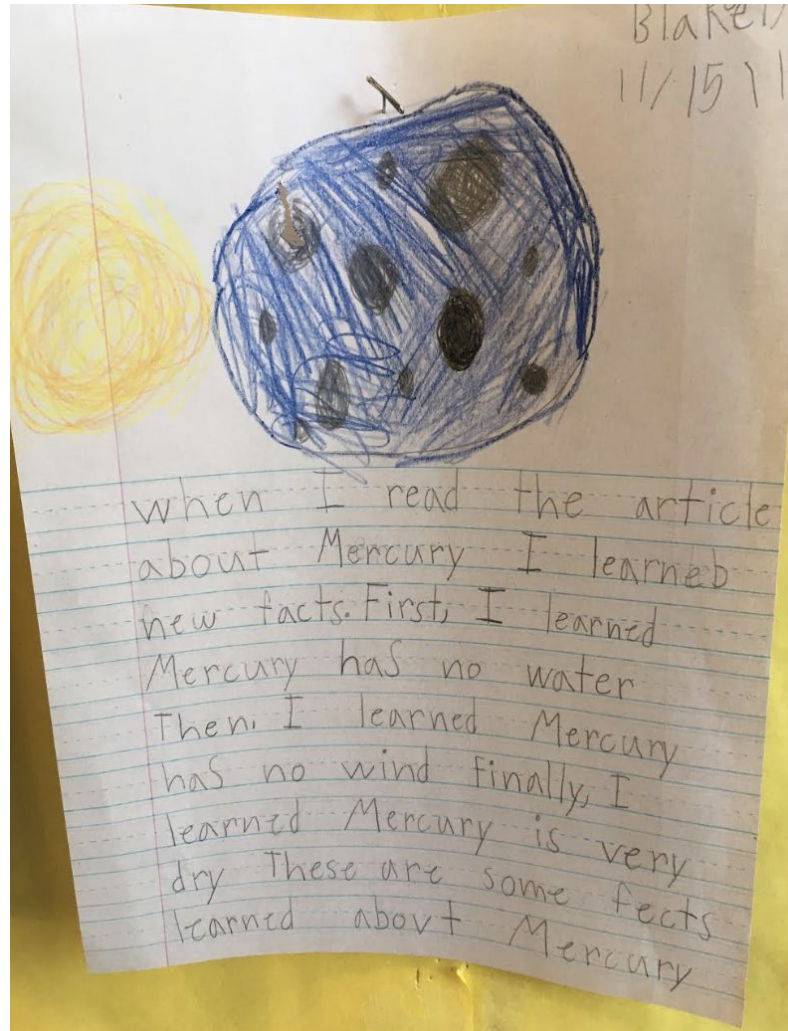# STEAM in Action

Grade 2

Using key vocabulary from a learning journal to create elaborate descriptions about the properties of objects

Grade 1

Using a tool to determine whether the engineering project meets the criteria for success

Mountain View Whisman School District

STEAM Integration

TechSmart

Another component of the STEAM plan is the implementation of the Techsmart pilot

- Techsmart pilot was made possible through a grant from Google to the Mountain View Education Foundation
- Techsmart has brought coding curriculum to students in grades 3-5 at Castro and Theuerkauf
  - Students use block coding to write programs that make computers follow directions
- Techsmart also has coding electives at both middle schools
  - Computer coding - students use Python to code assigned programs and ton design and develop their own unique games and interactive experiences
  - Coding through Math - Similar to computer coding but also integrates mathematical concepts like variables, operations, and conditions
- Teachers were trained in Summer 2019
  - Elementary: August
  - Middle School: May, July, and December

Science Curriculum Adoption Committee

Mountain View Whisman School District

Science Task Force

Elementary STEAM Teachers:

Laurel Shephard - Bubb

Jaclyn Diaz - Huff

Karen Gordon - Landels

Jennifer DeGraff - Mistral

Allison Fossioto - Monta Loma

Theresa Lester - Stevenson

Angela Bisbee - Vargas

Middle School Science Teachers:

Susan Papson - Graham

Claire Webber - Graham

Michael Newman - Crittenden

Instructional Coach

Ranen Bhattacharya

Parents

Silja Paymer - Parent at Bubb

Margaret Poor - Parent at Crittenden

Administrators

Cathy Baur - District Office

Tara Vikjord - District Office

Cyndee Nguyen - Bubb

Heidi Galassi - Landels

Swati Dagar- Theuerkauf

Sonia Gomez Morales - Crittenden

Science Task Force Meeting Schedule

Meeting Date	Topic
December 2	Framework overview Rubric for materials review
December 11	Materials Review
December 17	Materials Review
December 18	Materials Review
January 27	Pilot Timeline Pilot Rubric Training
TBD	Pilot Training 1
TBD	Pilot 1 Review
TBD	Pilot Training 2
TBD	Pilot 2 Review
TBD	Final Recommendation
May	Recommendation to BOT
June	Adoption by BOT

Materials Review

All members of the committee reviewed materials using a common rubric

The following were agreed upon as the most important areas of the rubric

- Presence and accuracy of high quality phenomena/problems
- Phenomena/problems drive three dimensional learning
- Presence of logical sequence of learning
- Hands-on, engaging learning activities
- Support for students with diverse learning needs (English Learners, Students with Disabilities, high performers)

Next Steps

Next Steps

- Continue professional learning and coaching for STEAM teachers, classroom teachers, and administrators
- Continue the integration of science concepts and cross cutting concepts into literacy instruction
- Pilot, recommend, and adopt new science curriculum
  - Training for all STEAM teachers on new materials
  - Development of new pacing guide with supports for integrating hands-on activities, art, math, and engineering opportunities
- Review Techsmart pilot and determine next steps

Questions?