



PORTRAIT OF A NEVADA LEARNER

Piloting the Portrait Case Study

School Name and District

Lied STEM Academy, CCSD

Names of Individuals and Roles

Heidi Carr, Instructional Facilitator
Cody Hidler, ELA Teacher
Claire Romzek, Magnet Coordinator
Kelly Thorson, Principal
Danielle Williams, Assistant Principal

Introduction

Our school reframed STEM to address the problem of all teachers at our STEM Academy not considering themselves STEM teachers. We were inspired by a school we toured in Baton Rouge, Louisiana, with the slogan “The 3 C’s in every classroom, every lesson, every day.” This got us thinking, what do teachers do in non-Science, Technology, Engineering, and Math classes related to the skills that STEM subjects build? We brainstormed a list of words with the driving question, “What do students learn through STEM?” This list consisted of words like “collaboration, failing forward, problem-solving, reading for understanding, critical thinking, exploration, communicating ideas...” We looked at the list of words and created our new definition of STEM: Solving Problems, Trial and Error, Effective Communication, and Mental Perseverance. We believe this is the first step in helping all teachers on our campus understand that no matter what subject they teach, it is related to STEM.

Intended Impact

Solving Problems-relates to the thrive, contribute, identify, and belong pieces of the state portrait of a learner. Solving problems relates to **contribute** because it requires critical thinking, curiosity, creativity, and academic knowledge, and if teachers are posing authentic problems, there will be civic engagement. Solving problems relates

to **thrive** because it empowers students to learn through doing, where they will need to make decisions and be resilient as their first idea might not be the final solution to the problem. Solving problems relates to **identity** because it gives students purpose in their learning. Solving problems relates to **belong** because students build communication skills as it takes collaboration and through the process of solving problems, students can become more empathetic to their “clients.”

Trial and Error is connected to **thrive**-building resilience, empowering students to learn through trial and error and make decisions about their learning. This is also connected to **contribute**, as through trial and error, students will need to think critically and creatively while applying their academic knowledge. **Identity** is also connected, as Trial and Error may bring joy, as when they finally find the solution or become successful, it brings the learner joy. Authentic problems give students purpose and a reason to keep trying when the first solution doesn't work. Belonging is also represented as students working together, coaching one another, building community, and their communication skills.

Effective Communication is related to **belong**-as teachers are helping students become effective communicators, they will be building relationships within their learning communities. It is related to **contribute** because students need to be able to communicate their thinking and how their academic knowledge relates to the thinking. It is related to **identity** because students can share about themselves, advocate for themselves, and effectively communicate their thought processes. Furthermore, it relates to **thrive** because effectively communicating empowers one to speak up and speak their thoughts so that they are heard and understood.

Mental Perseverance is related **thrive**, as they have to have resilience in their learning. It relates to **belong**, as encouraging others to persevere is part of building relationships and community and having empathy for others. There is **identity** in pushing through; ultimately, being successful helps build character, bringing joy and creating purpose. By not giving up and thinking critically and creatively while mentally persevering, students are **contributing** and helping the collaborative group.

Philosophy: this will impact the philosophy of education at our school as teachers frame activities to our new STEM definition. Teachers will empower students to learn through problem-solving and thus have more authentic learning experiences. We are a Project Based Learning school; this will also impact the implementation of PBL in classrooms; as we frame activities through STEM, it will lead to more PBL taking place in all content areas.

Policy: One of our policies in our school and district is “reassessment.” Learning through Trial and Error and having Mental Perseverance are two critical pieces for teachers and learners to remember to understand the purpose of reassessment.

Professional Learning: By having the schoolwide STEM acronym it can drive our professional learning sessions. We can relate every professional learning topic to one of the four letters of STEM to help connect for teachers why what they are learning is essential and applicable to the learners at our school.

Teaching and learning practices: In order to fully implement STEM in all content areas, teachers are going to have to analyze their teaching practices; is the activity they are giving students fostering the STEM skills that we have defined at our school, if not how can they restructure their lessons/activities in order to foster the STEM skills fully. Project Based Learning utilizing the Design Process (PBL) is also a teaching/learning expectation at our school; although still not fully implemented among all staff, this newly reframed STEM acronym will help teachers see how PBL helps foster STEM skills. Students will begin to embrace not getting the answer quickly and begin to understand that learning is not about getting the grade but the process of STEM.

Project Work

- Met as a team of 5 to fully understand what our vision was
- Rolled out to a team of 13 teachers who
 - developed the framework for STEM, a chart that identified what they were already doing in their classrooms that related to STEM
 - began using the language of Solving Problems, Trial and Error, Effective Communication, Mental Perseverance in their classrooms
 - Reflected on the implementation of the language by rating students understanding of STEM and attitude toward STEM, as well as the activities they were doing when using that language
- Formed a Student Advisory Board who:
 - Were selected from the classrooms of the 13 teachers
 - Met once to explain what their teachers have been asked to do and instruct them to listen for the language and observed their classmates to see reactions to hearing these new terms
 - Met two additional times to give feedback on their observations
- Presented to all staff members during Professional Development
 - Overview of Portrait of a Learner Process
 - How Lied STEM Academy is involved

- Further the development of the framework
- Synthesize the framework and create student friendly statements about what STEM looks like in each content area.

Next Steps

- Create posters for each content area
- Create bookmarks for students
- All teachers implementing the new language and purposely planned opportunities for students to build those STEM skills beginning fall 2024

Lessons Learned

- Students need guidance and reminders of how to productively and effectively communicate about the task at hand.
- Most students are receptive to the concept of mental toughness, mostly if it also involves communicating effectively with peers.
- Students believe STEM is in all content areas, but not all teachers believe they are STEM teachers
- 47% of the 22 students surveyed thought that reframing tasks/procedures using the STEM language will change student's attitudes toward those tasks/procedures

Project Artifacts: Case Study Information

- [Pilot-Student Advisory Board](#)
- [Student Advisory](#)
- [Student Advisory](#)
- [STEM Framework Outline for Content Educators](#)
- [Pilot Implementation daily reflection \(Responses\)](#)
- [Portrait of a Learner](#)