



cognia™

# Successful STEM/STEAM Programs

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# Student Engagement

- Think of a single word that describes the type of classroom where STEM engagement currently exists at your school.

# STEM is. . .STEM is Not



# STEM

The point is STEM education does not look like traditional classrooms. Traditionally, students hit the books to find their information. The learning occurred as a result of chapters in a textbook, defining terms in the glossary, and highlighting pertinent sections. There's an occasional demonstration or class discussion, and then it's test time. Maybe this worked for previous generations, but the students of today don't learn best with this format. Maybe it's due to attention spans supposedly shortened by the massive amount of information and entertainment that's instantly available online. Accustomed to instant gratification, many people will find it taxing to wade through chapters of a book to find the information they want. In any case, today's students prefer not just to read about subject material: they want to see it in action, they want to have a hands-on experience that illustrates a concept. Interacting with the content helps them absorb it, and it deepens their connection to the material, ensuring they'll remember more even after taking a test.

# STEM Teaching and Learning

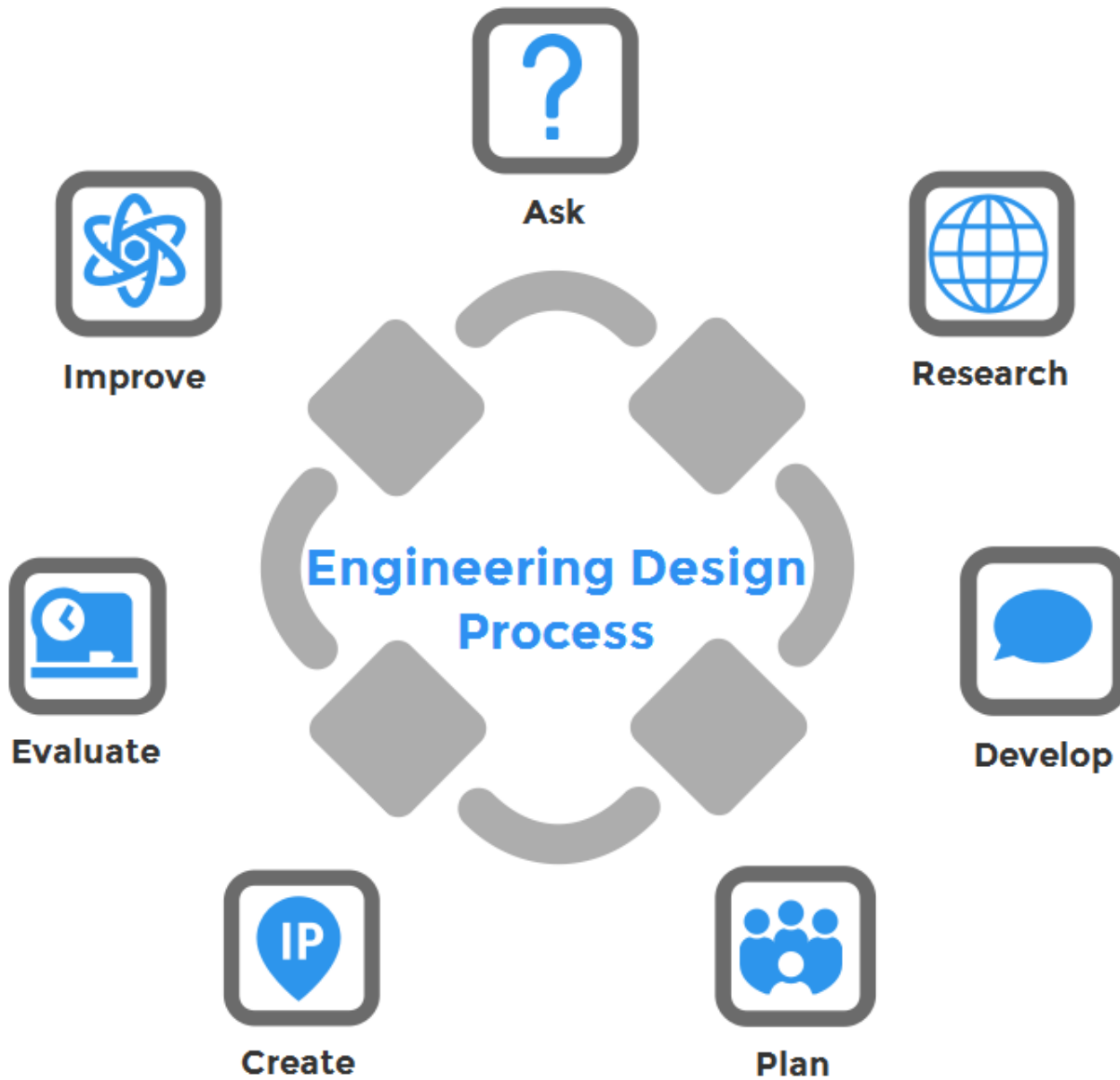
## STEM Educators

- Facilitators
- Innovative
- Supportive
- Effective Guides
- Collegial
- Reflective
- Content Experts

## STEM Students

- Problem-solvers
- Independent
- Collaborative
- Creative
- Self-directed
- Critical thinkers
- Communicators

# Where's the Engineering?



# Findings Conversation

## STEM Reviewers

- Ratings for all STEM Indicators
- Classroom observation data
- Stakeholder interview outcomes
- Powerful Practices and Opportunities for Improvement
- Next Steps

## Collaborative Discussion

## School Leaders

- Questions about outcomes
- Feedback about the process
- Comments/reflections about findings

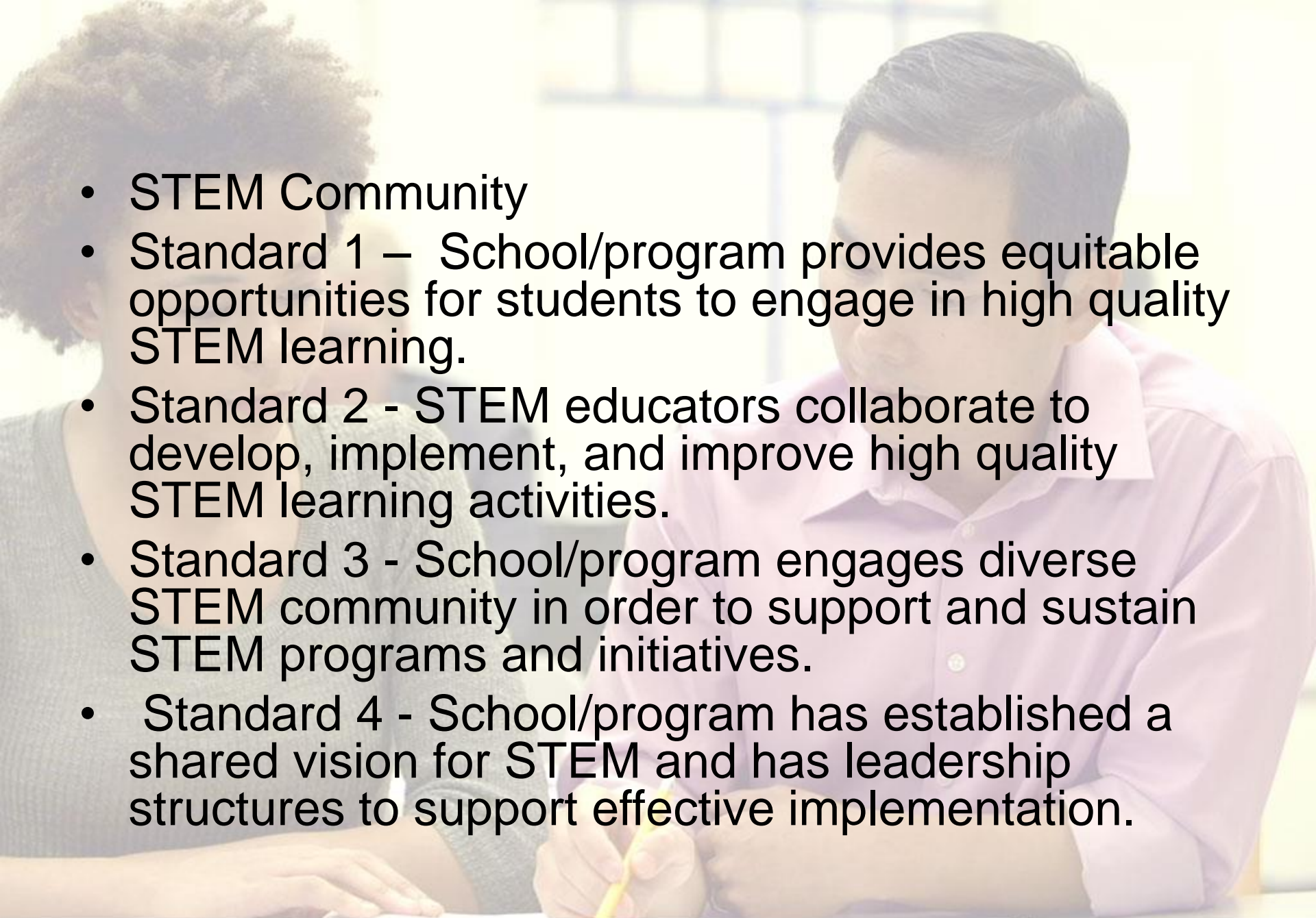


# STEM Standard

*STEM students have the skills, knowledge, and thinking strategies that prepare them to be innovative, creative, and systematic problem-solvers in STEM fields of study and work.*





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- STEM Community
  - Standard 1 – School/program provides equitable opportunities for students to engage in high quality STEM learning.
  - Standard 2 - STEM educators collaborate to develop, implement, and improve high quality STEM learning activities.
  - Standard 3 - School/program engages diverse STEM community in order to support and sustain STEM programs and initiatives.
  - Standard 4 - School/program has established a shared vision for STEM and has leadership structures to support effective implementation.

- **STEM Learning Culture**

Standard 5 - Leaders ensure that all stakeholders have ongoing opportunities to access information and learn about STEM implementation.

Standard 6 - Educators and leaders participate in an ongoing system of STEM-specific professional learning.

Standard 7 - Students engage collaboratively in authentic inquiry during ongoing units of study.

Standard 8 - Students engage in self-directed STEM learning guided by educators who are effective facilitators of learning.

# STEM Experiences

Standard 9 - School/program provides within-school and extra-curricular opportunities for students to extend STEM learning.

Standard 10 - Students demonstrate their learning through performance-based assessments and have opportunities to develop self-assessment and self-monitoring skills.

Standard 11 - STEM learning experiences integrate all STEM disciplines with an emphasis on processes and practices associated with STEM.

Standard 12 - School/program provides high quality STEM courses and curriculum aligned to recognized standards and organized into interdisciplinary frameworks.



# STEM Outcomes

**Standard 13 - Students demonstrate STEM content knowledge representative of STEM literacy outcomes that prepare them for the next level of learning and work.**

**Standard 14 - Students develop STEM skills and cross-cutting competencies that support workforce readiness.**

**Standard 15 - School/program engages in a continuous improvement process for STEM.**

**Standard 16 - School/program conducts evaluative activities to ensure the effectiveness of STEM implementation.**

# Congratulations!



Knowledge is opportunity