

# CHAPTER THREE

## STEAM Mindsets and Skillsets

### STEAM MINDSET

Mindsets are attitudes that impact motivation and achievement, influencing decision-making and how individuals approach challenges.

STEAM is more than just the subjects it represents (Science, Technology, Engineering, Arts, Mathematics). It can also be known as an acronym for "Self-starter, Thinker, Energizer, Adventurer, and Maker". STEAM mindset encourages exploration, experimentation, and learning across all areas of the curriculum.



# Steam Mindsets Attributes

O1



## Self-Starter, Self-Motivated, Self-Driven

Individuals with this attribute possess confidence, self-awareness, and a strong sense of self-worth. They operate mindfully, setting specific goals and taking initiatives. They plan, strategize, communicate, persevere, and manage their own progress effectively.

O2



## Thinker, Embrace Technology

Thinkers exhibit critical, innovative, and creative thinking. They make informed decisions and use technology for sustainable problem-solving. They ask questions, apply knowledge to new situations, and reflect on their learning.

O3



## Energizers

Energizers radiate positivity, engaging and empowering those around them. They excel in building relationships, are ethical, empathetic, and skilled at collaboration. They contribute to others' growth and inspire teamwork.

O4



## Adventurer

Adventurers are curious explorers who learn through experimentation and investigation. They are authentic, risk-taking, analytical, and adaptable learners, embracing challenges and new experiences.

# Steam Mindsets Attributes

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## Maker

Makers are motivated creators with a strong sense of purpose. They employ design thinking, tinkering, and generative learning to master their craft. They take action and make their voices heard.



## HOW TO FOASTER STEAM MINDSET IN THE CLASSROOM

- Creating a supportive environment for nurturing the mindsets.
- Building upon the growth mindset concept by encouraging self-compassion, quieting negative self-talk, and promoting creative practice



# Steam Mindset Strategies for the Classroom

There are some healthy classroom practices that helps foster STEAM mindsets in students, let's take a look at some simple actions that can lead to great impact.

O1

Demonstrating a STEAM mindset as a facilitator.

O2

Being aware of and managing our own negative self-talk.

O3

Guiding learners away from fear or negativity by:

O4

Encouraging willingness to take risks and emphasizing process over product. Praising experimentation and valuing mistakes for learning.

O5

Promoting self-compassion by accepting imperfections and efforts to learn.



# Steam Mindset Strategies for the Classroom

O6

Cultivating empathy through active listening, suspending judgment, and seeking to understand unique perspectives.

O7

Modeling enthusiasm and playfulness, expressing joy and curiosity while interacting with ideas, materials, and processes.

Encouraging learners to share highlights of their experiences and explore creative, even wild, ideas.





# STEAM SKILLSETS

Skillsets are specific abilities that allow individuals to accomplish tasks. The STEAM skillsets are necessary for student success in a STEAM-rich future and 21st-century workplace.

## THE FIVE ESSENTIAL STEAM SKILLS

- **Critical Thinking:** The ability of the student not to passively listen to information or instructions – but constantly question and form an independent analysis of facts to come to a decision.
- **Problem-solving:** This means tackling a problem head-on to come up with a potential solution.
- **Creativity:** It is hard to define. Originally meaning 'to bring into being', creativity can be thought of as producing or creating something using original and unusual ideas.
- **Communication:** Being able to listen well understand a topic and share with others well enough for them to understand.
- **Collaboration:** The ability of students to work together effectively to achieve a common goal.



# EXAMPLES STEAM SKILLSETS

- **CURIOSITY & IMAGINATION** Students value originality, generate new ideas, investigate life with curiosity, and ask questions.
- **COURAGE & RISK-TAKING** Students work outside their comfort zones, embrace adventure, stay open to new ideas, and strive to achieve their goals.
- **PERSISTENCE & GRIT** Students see a task through to completion, push through obstacles, and work to create solutions to problems. Students see challenges as learning
- **PROBLEM-SOLVING** Students generate alternative solutions to problems, think critically, recognize solutions, and proactively develop creative solutions.
- **RESOURCEFULNESS & ADAPTABILITY** Students explore quick and clever ways to overcome challenges, with the understanding that they can always
- **TEAMWORK** Students learn from new people and work with people with diverse perspectives, skills, and talents.
- **DESIGN THINKING** Students learn processes for problem-solving that originate with empathy and compassion.

A blurred background of a classroom. In the foreground, a student is seen from behind, sitting at a desk with their hand raised. To the left, another student is holding a book. In the background, a whiteboard displays the word 'PARADE' and some diagrams.

# CLASSROOM DISCUSSIONS

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FAMOUS INVENTIONS THAT WAS A  
PRODUCT OF MISTAKES

## CLASS ACTIVITY

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DESIGN CHALLENGE

Create an artistic designs with the  
materials presented to you



***Creativity is the secret sauce to  
Science, Technology, Engineering,  
Art and Mathematics.***

Ainissa  
Ramirez