CHAPTER FIVE

PROBLEM BASED LEARNING

Problem-Based Learning (PBL) is an educational approach in STEAM that places students at the center of their learning journey. It engages learners in real-world, complex problems or challenges, which they must investigate, analyze, and solve collaboratively.

PBL goes beyond the conventional rote memorization of facts and encourages critical thinking, creativity, and teamwork.

In the context of STEAM education, PBL immerses students in authentic scientific, technological, engineering, artistic, or mathematical problems, mirroring the challenges they might encounter in their future careers.

This method not only equips students with practical skills but also nurtures a deep understanding of STEAM concepts by connecting theory to practical application. It fosters a sense of ownership and curiosity, making learning an active and dynamic process, and ultimately preparing students to tackle the complex, multifaceted challenges of the modern world.

The Benefits of Problem Based Learning

1 **Encourages self-directed learning**
This student-focused approach fosters responsibility and initiative in learning. Through research and creativity, students develop skills that have lifelong value.

2 **Develops versatile skills:**
The skills cultivated extend beyond the classroom and subject boundaries, applicable to diverse academic areas and real-world scenarios, from leadership to practical problem-solving.

3 **Enhances engagement**
Instead of passive learning, students actively engage in problem-solving, employing critical thinking and creativity.

4 **Builds teamwork skills**
Collaboration is often integral to problem-based learning, pushing students to develop teamwork skills such as communication, cooperation, compromise, and attentive listening.

5 **Inspires intrinsic motivation**
The rewards of problem-based learning go beyond grades, encompassing a sense of accomplishment and satisfaction from solving puzzles, devising innovative solutions, or creating tangible outcomes.

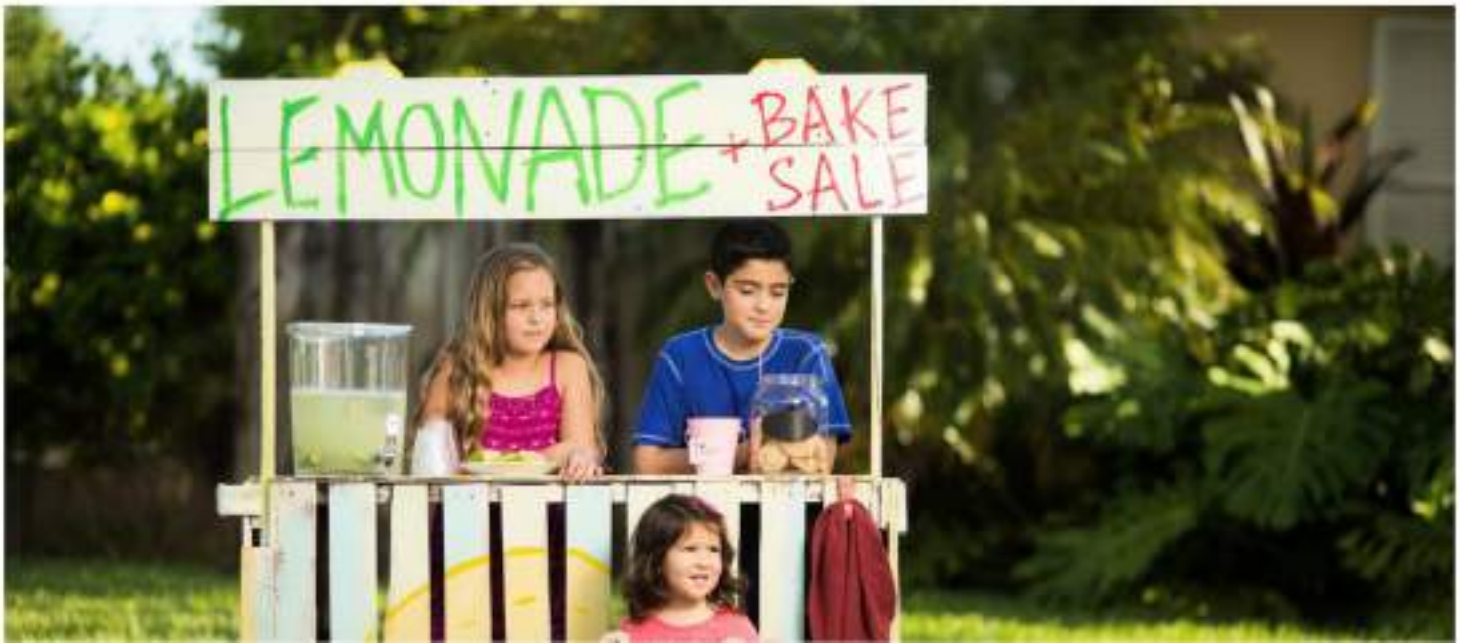
EXPLORE PBL MODEL

DESIGN THINKING:
Entrepreneurship in the Classroom

Design thinking is a non-linear, iterative process that teams use to understand users, challenge assumptions, redefine problems, and create innovative solutions to prototype and test. It is a mindset approach to problem-solving and innovation anchored around human-centered design, It is people-centric.

Human-centered design is a problem-solving technique that puts real people at the center of the development process, enabling you to create products and services that resonate and are tailored to your audience's needs.

Entrepreneurship in the Classroom is a dynamic educational approach that equips students with the mindset and skills needed to thrive in an ever-evolving entrepreneurial landscape. This methodology encourages students to adopt a human-centered perspective, where they empathize with end-users to identify unmet needs or problems.

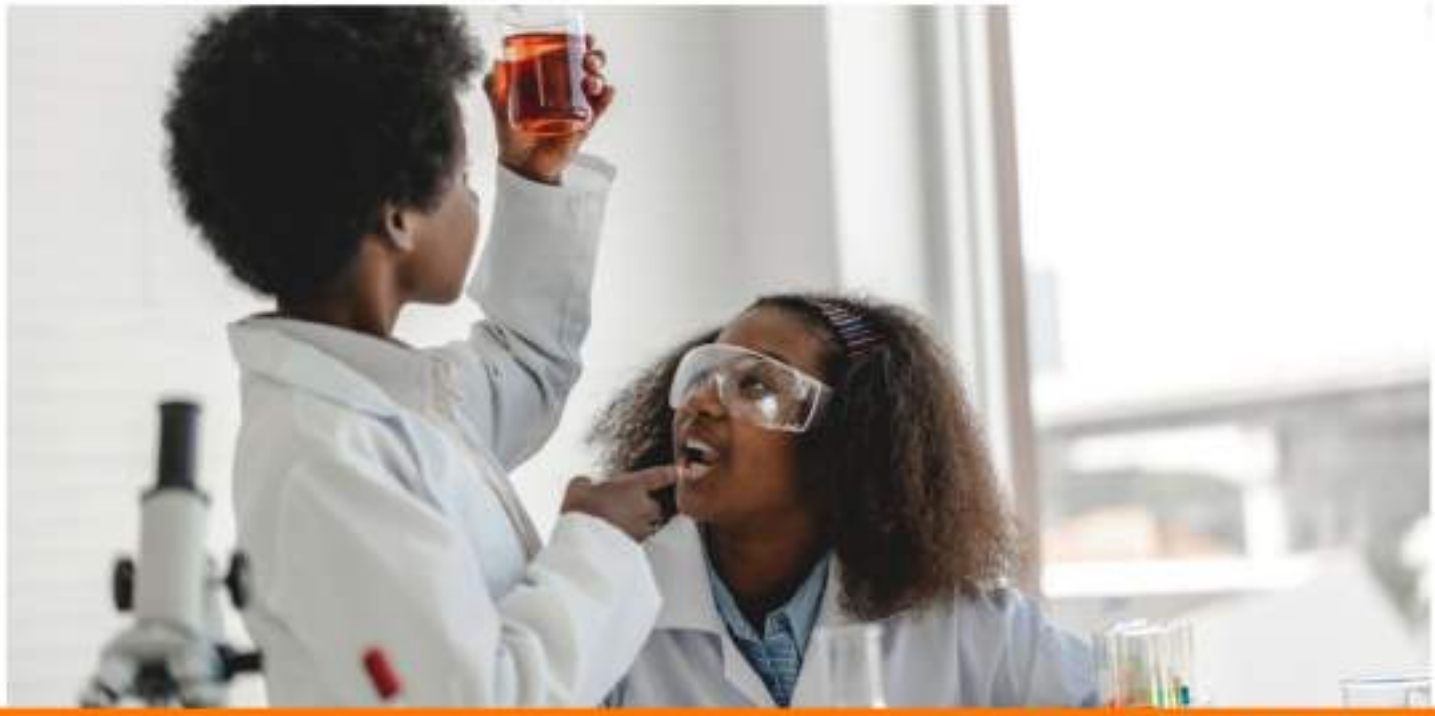


EXPLORE PBL MODEL

DESIGN THINKING:
Entrepreneurship in the Classroom

By emphasizing collaboration, creativity, and iteration, Design Thinking fosters innovation, enabling students to develop and prototype solutions that address real-world challenges. This approach not only cultivates an entrepreneurial spirit but also instills valuable life skills such as problem-solving, critical thinking, and adaptability.

Moreover, it empowers students to see themselves as active creators and problem-solvers, preparing them to navigate the complexities of the 21st-century workforce while fostering a deep sense of agency and purpose in their educational journey.



DESIGN THINKING OVERVIEW

1

Empathize:
Research User Needs

Gain empathetic understanding of the problem through user research. Develop insights into users' needs and challenges, setting aside personal assumptions.

2

Define: State Users' Needs and Problems

Analyze and synthesize gathered information from the Empathize stage. Formulate clear problem statements that represent the core issues identified.

3

Ideate: Challenge Assumptions, Generate Ideas

Build upon insights gained in previous stages to generate creative ideas. Encourage thinking outside the box and exploring innovative solutions. Utilize brainstorming to explore diverse possibilities.

4

Prototype: Create Experimental Solutions

Develop scaled-down, cost-effective prototypes of potential solutions. Experiment with various ideas to identify the most promising approaches.

5

Monitor, measure, and optimize

Rigorously test prototypes to assess their effectiveness and viability. Gather feedback from users and evaluators to refine and improve solutions. Design thinking is iterative, allowing for redefinition of problems and further refinement.

WHO IS AN ENTREPRENEUR

An **entrepreneur** is an individual who creates and/or invests in one or more businesses, bearing most of the risks and enjoying most of the rewards. The process of setting up a business is known as "entrepreneurship"

Let's look at the definition from a human centered designer perspective

An entrepreneur identifies a problem that is shared by many, create solutions to the problem by connecting with the people in their community affected by the problem and
has an entrepreneurial mindset.

It can be anybody !

ENTREPRENEUR CHECKLIST

Entrepreneurship mindset

We must learn to think like a successful business person.
Keep this in mind :

- ***The best time to start is now***
- ***Opportunities are all around you***
- ***Fear is meant to be overcome***
- ***Failure can be a good thing.***

Marketing Brainstorming

What is the marketing plan for the business?

Skillsets Inventory

As you explore various marketing strategies, make informed choices. You need to take an inventory of your skill set.

- What skills do you have?
- What skills would you need to learn?
- What tools do you know how to use?
- What tools would you like to learn how to use?

Business Goal Setting

What business goals do you want to set for the month, quarter, and year?

CLASS ACTIVITY

PICK ANY OF THE CHALLENGE TO WORK UPON:

1. Research food wastage.

- What issues does it present?
- What solutions have others found?

Challenge & Brainstorming

- Design a service / product that helps reduce/ eliminate food wastage.

Execute & Present

- Build your prototype and get your peer feedback. Polish and present your ideas.

2. Research climate change and flooding in your country.

Challenge & Brainstorming

- Design a service / Product that help reduce flood within our communities

Execute & Present

- Build your prototype and get your peer feedback. Polish and present your ideas.