CHAPTER EIGHT

TINKERING: REVERSED ENGINEERING

Tinkering, often referred to as reverse engineering is a hands-on and exploratory approach that encourages students to dissect, manipulate, and reconstruct objects and systems to gain a deeper understanding of how they work.

This methodology embodies the spirit of curiosity and experimentation, inviting learners to become active problem-solvers by dismantling and analyzing the components of technology, machinery, or artistic creations.

Tinkering fosters a profound connection between theory and practice, allowing students to bridge the gap between abstract concepts and tangible realities. In the process, it cultivates critical thinking, creativity, and resilience to failure, emphasizing that mistakes are opportunities for learning.

Tinkering is a cornerstone of STEAM education, where it ignites a passion for innovation and empowers students to become the architects of their own discoveries.

TINKERING

INVOLVES

Trying different actions like pressing buttons or moving objects to observe outcomes.

Combining instructions or actions to explore new possibilities.

Encouraging imagination and exploration without device limitations.

TINKERING PROMOTES COMPUTATIONAL THINKING BY DEVELOPING CRITICAL THINKING, COLLABORATION, CREATIVITY, AND COMMUNICATION SKILLS, OFTEN IN PAIRS OR GROUPS.

Incorporating tinkering into STEAM education offers affordability, especially if recyclable materials or donated broken gadgets are used.

Analyzing and deconstructing household gadgets and toys is an effective way to teach STEAM practices and content.

TINKERING ACTIVITIES FOR STUDENTS

- Analyze broken gadgets, considering materials, function, and components.
- Gain exposure to mechanical, electrical, and materials science engineering concepts.
- Learn entrepreneurial skills through this process.
- Sort, organize, label gadget components, and create schematics.
- Create displays of components on poster board or cardboard.
- Extend learning by attempting to fix broken gadgets or creating new devices or art from components.

CLASS ACTIVITY

Deconstruction of Toys and Gadgets: Try to understand to understand the function of each part and how to fixed it.

Construction: Try building something new out of the various gadgets parts available.

Construct a Cardboard Chair from used Cardboards.

Chain Reaction : Exploring the Cause and effects processes using every day items.

Circuits and Paper : Using simple methods to create a light bulb card.

Curiosity is probably one of the most important characteristics that people have who go into science, and engineering is about solving problems and creativity.

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