



STAGES OF THE DESIGN PROCESS IN PRACTICAL TRAINING: IDEA, SKETCH, TECHNOLOGICAL MAP, SAMPLE PREPARATION

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Abstract

This article explores four pivotal stages in the design process—idea, sketch, technological map, and sample preparation—within practical training contexts. Emphasis is placed on fostering creativity, problem-solving skills, and technical proficiency. By understanding these stages, educators can enhance student engagement, design outcomes, and overall educational effectiveness. Thorough analysis informs pedagogical innovation.

Keywords: Idea, Sketch, Technological Map, Sample Preparation, Creativity, Practical Training, Design.

INTRODUCTION

The design process is a vital component of art, engineering, and technology education, providing learners with systematic steps to transform abstract ideas into tangible solutions. Practical training serves as a framework for guiding students through this process, ensuring that theoretical knowledge is translated into hands-on expertise. Such an approach not only enhances skill development but also fosters creative thinking, problem-solving, and collaboration. Central to practical design training are four interconnected stages: idea generation, sketch creation, development of a technological map, and sample preparation. These phases enable learners to progress from conceptualization to execution in a structured, iterative manner, thereby reinforcing a deeper understanding of design principles.

Idea generation stands at the outset of any design endeavor, forming the conceptual bedrock on which subsequent decisions rest. During this stage, students are encouraged to brainstorm freely, harness their creativity, and explore various possibilities without the constraints of practicality. In a practical training context, instructors may present real-world problems or hypothetical scenarios to spark students' interest, prompting them to identify potential solutions. Through open-ended discussions and collaborative exercises, learners refine their initial ideas, taking into account feasibility and relevance. By encouraging an expansive mindset at this phase, educators help students cultivate the cognitive flexibility necessary for innovative design.

The sketch stage translates nascent ideas into visual form, acting as a bridge between abstract thought and concrete manifestation. In practical training settings, sketching exercises teach students to communicate design intentions clearly, experiment with compositions, and quickly iterate on multiple solutions. By rendering forms, proportions, and spatial relationships on paper, learners gain a clearer view of any conceptual limitations or potential improvements. Instructors often encourage rapid, low-fidelity sketches to promote efficiency and spontaneity,

thereby reducing the fear of mistakes. This stage not only refines the original idea but also prepares students for more advanced development in subsequent phases.

Developing a technological map is the next critical phase, wherein the conceptual vision and visual representations evolve into more detailed operational guidelines. In practical training, this step serves as a blueprint for translating sketches into viable products or systems. Students specify materials, processes, timelines, and quality benchmarks that outline the feasibility of the design. Such systematic planning promotes resource management, risk assessment, and adherence to industry standards. By evaluating factors like cost, manufacturability, and sustainability, learners gain insight into real-world constraints. Instructors use this stage to highlight the importance of strategic thinking, ensuring that designs remain both innovative and functional throughout implementation.

Sample preparation transforms the conceptual blueprint into a tangible prototype, allowing designers to test and refine their ideas. In a practical training environment, students learn to select appropriate tools, techniques, and materials to produce a representative model of their proposed solution. This process often reveals flaws or inefficiencies that may not have been evident on paper. By physically assembling components, learners gain tactile familiarity with the functional aspects of design, whether it pertains to ergonomics, aesthetics, or structural stability. Educators frequently emphasize iterative testing at this stage, reinforcing the principle that prototypes serve as valuable learning instruments for continual improvement.

Throughout these four stages, practical training underscores active learning methods that encourage experiential engagement and reflective thinking. Educators integrate hands-on projects, collaborative assignments, and iterative critique sessions to challenge learners beyond rote memorization. Such interactive pedagogies validate the role of trial and error, enabling students to learn from missteps and adapt designs accordingly. Reflection sessions—such as keeping design journals or hosting group discussions—provide opportunities for learners to analyze their own progress and the feedback they receive from instructors and peers. By underscoring each stage's iterative nature, educators cultivate the resilience and adaptability that are crucial attributes in a rapidly evolving design landscape.

Upon completion of the sample preparation, students are better positioned to reflect on the overall design journey and apply lessons learned to future projects. This culminating moment often includes formal presentations, where participants articulate the rationale behind each decision and justify their chosen solutions. Constructive critiques from instructors and classmates prompt revisions or expansions that can further refine the design. The cyclical nature of these stages affirms that design is rarely a linear process but rather a continuous exploration of ideas, forms, and functionalities. As learners become adept at managing each step, they develop the confidence and expertise required to excel in competitive professional domains.

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