

## THE ROLE OF THE EDUCATIONAL ENVIRONMENT IN FOSTERING STUDENTS' DESIGN COMPETENCIES

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**ABSTRACT:** The development of design competencies is an important learning outcome for students in many academic programs. However, fostering these skills requires an educational environment that provides the right scaffolding and opportunities. This article examines the key elements of the educational environment that can facilitate the enhancement of students' design competencies. It argues that a learning space optimized for design thinking and making can equip students with valuable creative problem-solving abilities. The creation of design studios, makerspaces, interdisciplinary projects, and communities of practice are discussed as strategies for constructing an educational ecosystem conducive to design skill-building.

**KEYWORDS:** Design competencies, design thinking, makerspaces, educational environment, creative problem-solving.

### INTRODUCTION

In Uzbekistan, teachers are increasingly incorporating activities to build design competencies into lessons across subjects. Educators use collaborative group projects that require students to research issues, ideate solutions, and create prototypes or models. Lessons may involve defining design challenges, brainstorming ideas, developing storyboards or flowcharts, and presenting creative solutions. For example, a biology teacher may task students with designing an innovative product that utilizes biomimicry principles to solve environmental problems. Or a history teacher may have students design a museum exhibition about a historical event using critical research, curation thinking, and communication skills. These design-based activities provide authentic learning experiences for students to gain competencies in creative problem-solving, visual thinking, user empathy, and systems thinking. The focus on design and creation promotes higher-order skills beyond content knowledge, equipping Uzbek students with critical 21st-century capacities.

Design competencies encompass a multifaceted skill set including creative confidence, visual thinking, experimentation, systems thinking, and human-centred problem solving [8]. These abilities enable students to translate ideas into tangible innovations that create value for society. However, cultivating design literacy requires an immersive educational environment that provides authentic design experiences.

Traditional pedagogical approaches that emphasize passive learning are insufficient for developing the behaviours and mindsets underpinning design ability [5]. Students need opportunities to actively apply design techniques through hands-on projects, receive critique, and interact with communities of practice. The ecosystem of infrastructure, activities, norms and people constitutes the educational environment that can scaffold students' acquisition of design competencies. The intentional construction of this environment is pivotal.

Various strategies for optimizing the learning ecosystem have emerged. Dedicated design studios and makerspaces facilitate collaboration, prototyping and tinkering [10]. Interdisciplinary projects situate design thinking in real-world contexts, promoting integrative problem-solving [3]. Participation in communities of practice socializes students into the professional design community [4]. This article will critically examine these approaches for fostering design competencies through the educational environment. It will analyze how studios, workshops, projects and communities together create an enriched ecosystem for design skill-building in students.

Equipping students with robust design abilities has far-reaching impacts, enabling the application of disciplinary knowledge for creative change. Design methodologies nurture the higher order cognitive capacities needed to address evolving social challenges in complex systems [1]. Therefore, optimizing the educational environment for design-based experiential learning is vital and urgent. This article discusses strategies for developing ecosystems conducive for students to construct creative confidence, experimentation mindsets, and real-world impact through human-centred design.

Optimizing the educational environment to nurture students' design competencies requires a systemic approach that integrates the physical, social, and pedagogical dimensions. While individual strategies like design studios, makerspaces, interdisciplinary projects, and communities of practice are impactful, combining these elements creates an ecosystem that provides holistic support for developing design literacy.

The physical spaces, tools, and materials promote the hands-on cultivation of design skills. The activities and projects situate learning in real-world practices. The culture fosters human-centred and creative mindsets. And the interactions with peers and experts provide apprenticeship-based acculturation. Together, these facets stimulate engagement in the design process and build creative confidence.

However, careful implementation is needed to realize the potential of these learning environments. Educators must intentionally facilitate activities and discussions to connect the competencies fostered across studios, makerspaces, collaborative projects, and communities of practice. Learners also need guided reflection to make explicit the design thinking skills

developed through these experiences. Periodic assessment of design abilities enables educators to refine the learning scaffolds for maximal impact.

While design studios and makerspaces provide the foundation, maximizing interdisciplinarity and participation in communities of practice enhances the ecosystem's richness. A focus on human contexts and needs must ground activities within these enabled spaces. This integrated educational environment can provide the fertile soil for students' design competencies to blossom.

The development of design literacy prepares students to tackle the multifaceted problems facing society using human-centered and systems-thinking lenses. However, the learning ecosystem must be thoughtfully constructed to foster the behaviors and mindsets underpinning these design competencies. This requires a commitment to designing empowering educational environments that unlock students' creative potential. The approaches discussed constitute key levers in this systemic undertaking but require coordinated implementation underpinned by a philosophy valuing design, empathy and innovation. Further research should refine best practices for maximizing these learning environments' impact on design competency attainment. Intentional education design can equip the next generation with the understanding and skills to create positive change.

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