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Implementation of design thinking in Indian Schools, highlighting the role of teachers as changemakers in promoting educational innovation

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Abstract

The National Education Policy (NEP) 2020 marks a transformative shift in India's approach to school education, emphasising holistic development, creativity, and critical thinking. A notable inclusion within this policy is the advocacy for Design Thinking as a pedagogical tool to equip students with problem-solving, empathy, and innovation skills essential for the 21st century. Rooted in experiential and inquiry-based learning, Design Thinking aligns closely with NEP 2020's vision of moving beyond rote memorisation towards competency-based education.

This paper explores how Design Thinking has gradually made its way into Indian classrooms through curriculum reforms, teacher training programs, and interdisciplinary projects. It examines the integration of the Design Thinking Course alongside modern frameworks, recognising the importance of indigenous problem-solving traditions. The research also delves into the challenges faced by schoolteachers in adopting Design Thinking methodologies, ranging from a lack of training to rigid assessment frameworks, and proposes actionable strategies for effective implementation.

Through a synthesis of policy analysis, survey insights, and case studies, this study aims to highlight the critical role of educators in nurturing innovation at the school level. It advocates for structured teacher development programs and institutional support systems that empower schools to translate NEP's vision into tangible classroom practices, making learning more meaningful, creative, and future-ready.

Keywords: Design thinking, national education policy 2020, competency-based education

Introduction

India launched Design Thinking and Innovation Courses at schools and marked the beginning of the design thinking and innovation course in the Central Board of Secondary Education (CBSE) schools for Classes 7 to 12. It was a tiny but significant move for India to be the first country to introduce design thinking and innovation courses into schools. However, it is a reality that you cannot teach design anything through books. Introducing a design thinking course as part of the curriculum is insufficient; it is necessary to deliberate and evolve its pedagogy. In the case of the design thinking course, the role of the teachers, faculty member/coach/mentor is heightened; therefore, they must first study and understand design thinking before introducing it to the classrooms. While introducing much-needed critical thinking courses like design thinking is welcomed in the high school curriculum, the approach to imparting such education through the traditional, prescribed, sequential book-driven method is heavily dated and calls for attention [1].

The History and Evolution of Design Thinking in Indian Education: The origins of design thinking may be traced back to the mid-twentieth century, when design techniques became popular in architecture, engineering and industrial design. Herbert Simon (1969) was one of the first researchers to address design as a problem-solving process, laying it out in his important work, The Sciences of the Artificial. Later, the Stanford University-based design consultancy IDEO, notably via the work of David Kelley and Tim Brown, expanded and popularised design thinking as a systematic method applicable beyond conventional design domains (Brown, 2009; Kelley and Littman, 2001) [3].

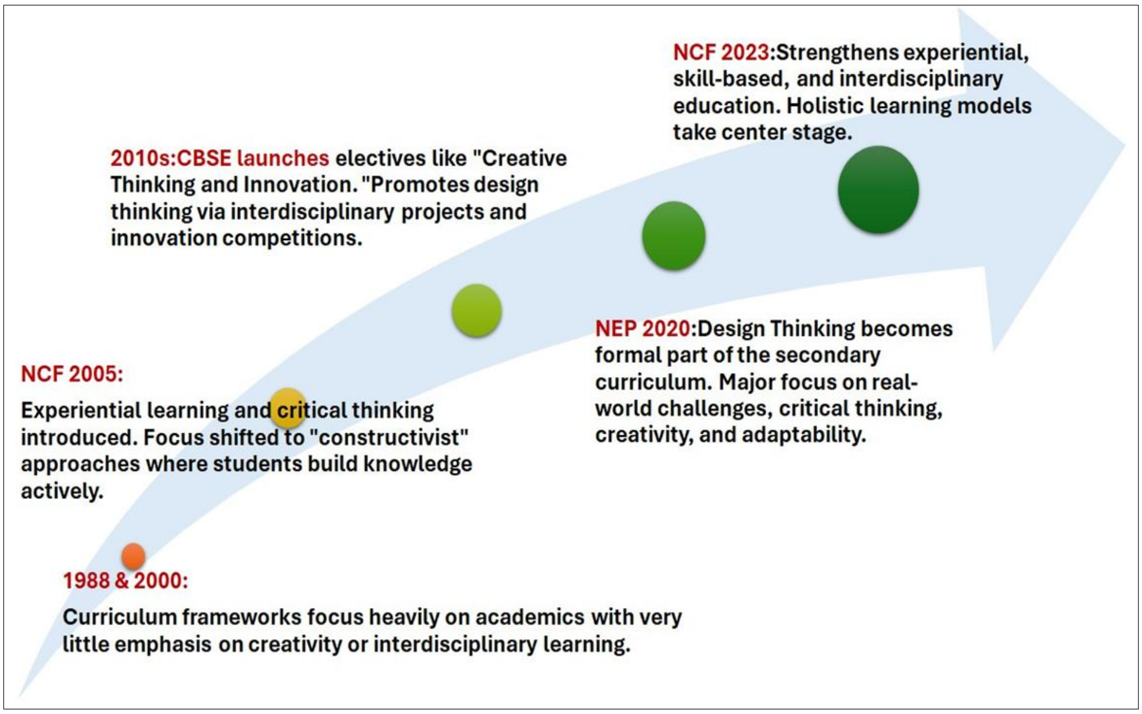

Fig 1: Shows Historical Evolution of Design Thinking in Indian Education

Why Design Thinking in Education?
Design Thinking in education is essential for the following reasons. It builds:

- Confidence
- Encourages critical thinking
- Fosters collaboration and empathy
- Addresses real-world problems

Benefits for Students

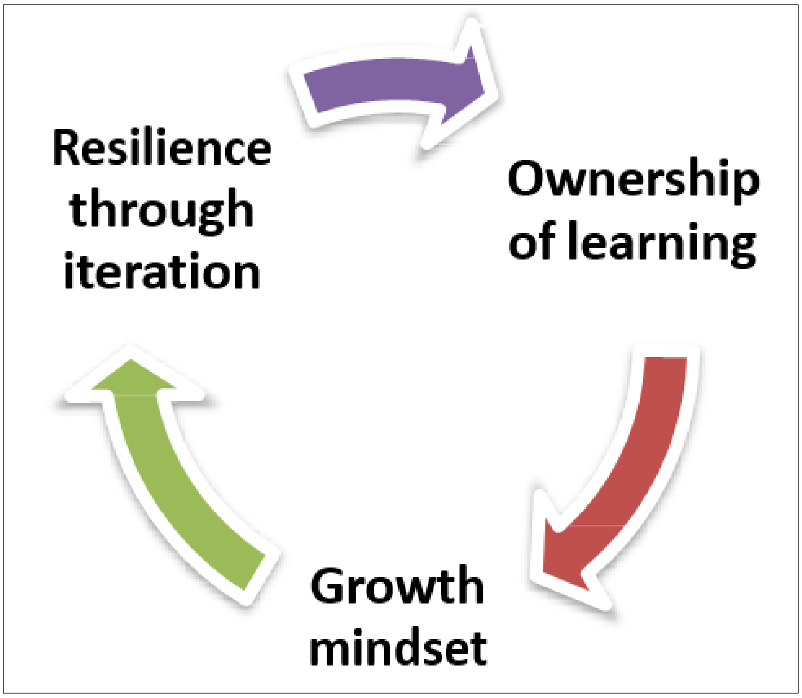

Fig 2: Shows the benefits of Design Thinking for students

Benefits for Educators
Reframe Teaching Challenges
→ Educators shift from "What's wrong?" to "How might we improve?"

Example: A teacher redesigning assignments and their policies after interviewing students about after- school challenges.

- **Create Innovative Learning Environments:** Classrooms become labs of exploration, collaboration, and experimentation.

Example
A math teacher introduced gamified problem- solving sessions based on student feedback.

Build Empathy Toward Students
Understanding students' diverse backgrounds improves engagement
Example: A rural schoolteacher co-designed a peer mentorship program after empathizing with first-generation learners

- **Foster Creativity in Lesson Planning:** New ways of presenting material emerge, making learning more fun and effective.
- Example: History lessons redesigned using storytelling and roleplay after ideation sessions.
- **Improve Collaboration Across Disciplines:** Teachers collaborate across subjects (STEM + Humanities projects). Example: Science and English teachers created a cross- disciplinary project on climate change storytelling.
- **Develop Growth Mindset Among Educators:** Failure in one approach is seen as a step toward innovation.

Methodologies for Implementing Design Thinking in Schools

Teachers play a very crucial role in educational ecosystems. It is important to enable them by providing proper training for the Implementation of design thinking in their classroom.
The role of teachers as changemakers in promoting educational innovation can be enhanced by the following ways:

- By training them through Professional Development programs such as workshops & Bootcamps, an introductory training on Design thinking can be introduced. These days, many universities and colleges build these kinds of programs in schools through their outreach programs.
- Other ways could be self-learning based on the individual pace of learning through Online Courses**:** MOOCs on design thinking (e.g., Stanford school, Coursera).
- Creating learning Communities among teachers, forming teacher innovation clubs, or peer-learning networks could support their learning.
- A curriculum that integrates Project-Based Learning (PBL): Embedding a design thinking framework into existing subjects (e.g., solving environmental issues in the science subject, creating projects around this problem) [4].
- Creating Cross-Disciplinary Collaboration by integrating art, science, and technology to foster holistic thinking.
- Use Design Thinking Tools like empathy maps, journey maps, brainstorming templates, which can make learning fun [7].
- Building Assessment Patterns and rubrics for creativity by applying the Design thinking framework that focuses beyond academic scores.
- An interesting way is to have a Portfolio-based Assessment that can be developed to document students' design journey.
- Encourage Peer and Self-Assessment that encourages reflection and feedback.

NITI Aayog's Atal Tinkering Labs (ATL) are an initiative aimed at fostering innovation and STEM learning in schools. These schools, for example, in Indian schools, have successfully implemented a design thinking course as a skill development course. ATL schools provide students with hands-on activities and tools related to science, technology, engineering, and mathematics. These schools foster curiosity, creativity, and imagination while developing design thinking, computational thinking, and adaptive learning skills. The students engage in practical projects using various kits and equipment and are equipped with resources for various STEM fields.
These schools have reported improved engagement, creativity, and collaboration among students. Teachers trained in design thinking concepts demonstrate a better understanding of students' needs, guide inquiry, co-create with peers, and innovate by designing and refining learning experiences. They model problem-solving mindsets and foster trust, experimentation, and iteration, transforming educational ecosystems. Teachers gained greater confidence in facilitating open-ended projects, resulting in tangible outputs such as prototypes, social campaigns, and technology solutions [5].
The Atal Innovation Mission (AIM) provides a grant-in-aid to ATL schools, covering establishment and operational expenses. ATLs have been established across India, participating in national-level competitions, exhibitions, and workshops. However, ongoing support for curriculum alignment and classroom management is needed. Design thinking in Indian schools is not just about teaching a method but also cultivating a mindset, with empowered teachers acting as catalysts of change. Successful implementation requires systemic support, including policy alignment, curriculum flexibility, infrastructure and resource access, and recognition of teacher- led innovation. This approach aligns with the aspirations of NEP 2020 and prepares a future-ready generation.

Conclusion

In the ever-evolving landscape of Indian education, guided by the transformative vision of NEP 2020, the role of teachers is no longer confined to delivering the curriculum alone. Teachers of today are expected to become facilitators of creativity, collaboration, and critical thinking - all of which are hallmarks of Design Thinking.
Design Thinking, as introduced by thought leaders like Tim Brown, emphasizes that everyone can be a design thinker - including teachers. However, this requires a shift in mindset and the willingness to explore divergent thinking (generating many ideas), synthesis-based learning (making sense of complexity), and human-centred approaches to problem-solving.
In an educational context, this means that a teacher might be an expert in Science, English, or Math - but though design thinking also demonstrates empathy, creativity, collaboration, and adaptability.
Interestingly, while early Design Thinking initiatives like those at IDEO once hesitated to include business graduates due to a lack of creative flexibility, they later realised the importance of integrating business thinking into design thinking. Likewise, educators today must blend academic depth with innovative breadth - becoming not only subject experts, but also problem-solvers, mentors, and changemakers.
This shift also requires Indian teachers to move from being part of multidisciplinary teams (where each discipline works

in parallel) to interdisciplinary teams, where collaboration is fluid and solutions are co-created across boundaries [7]

To truly fulfil the promise of NEP 2020 and prepare students for an uncertain future, Indian teachers must reimagine their roles. They are not just educators, but design thinkers - shaping not just curriculum, but the character and creativity of a generation. By becoming T-shaped educators [2], we ensure that learning is no longer linear, but human-centred, interdisciplinary, and deeply meaningful. So, be open to learning beyond the subjects, cultivate empathy: understand the students lived experiences and perspectives. Encourage questioning and curiosity in the classrooms, not just by giving correct answers but also by embracing failures for students and self. Facilitate hands- on projects that relate to real-world problems. Create learning spaces where students feel safe to explore, ideate, and innovate [7].

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