An Impact Assessment Report of the Design Impact Movement

Implemented by IKP Knowledge Park

Study Conducted by

Soul Ace
2024 – 2025

CONTENT

ABBREVIATIONS

CSR: Corporate Social Responsibility

IKP: IKP Knowledge Park

SDGs: Sustainable Development Goals

UN: United Nations

NIFT: National Institute of Fashion Technology

IIITDM: Indian Institute of Information Technology, Design & Manufacturing

CHAPTER 1: INTRODUCTION

Program Overview

The Design Impact Movement – DI Movement, a flagship initiative by Titan Company, is an innovative, open-platform designed to empower new-generation innovators in applying design-led approaches to tackle critical social and environmental challenges. Rooted in human-centred design, the program guides participants from problem identification through ideation, prototyping, and market readiness, culminating in scalable solutions aimed at meaningful social impact. Participants gain access to structured learning modules, expert-led masterclasses, design challenges, and hands-on mentorship, facilitating their growth from creative thinkers into impactful changemakers. By connecting passionate individuals with industry experts and resources, the DI Movement fosters a collaborative community dedicated to building a sustainable, inclusive, and purposeful future.

Key Objectives

- To create cohorts of future solution designers and social entrepreneurs focused on social impact.
- To foster youth engagement by conducting targeted outreach, workshops, and mentorship sessions that strengthen human-centred design and entrepreneurial skills.
- To provide incubation and technical support—through partnerships with IKP, Tinker Labs, and other ecosystem players—that helps student-led ventures evolve from ideation to market-ready solutions.
- To cultivate an inclusive innovation pipeline by collaborating with tier 2 and tier 3 colleges and ensuring geographical diversity in participation.
- To systematically track and evaluate outcomes, such as the number of applications, project conversions, and potential social impact metrics, thereby reinforcing data-driven decision-making and program refinement.
- To promote cross-sector partnerships (corporate, academic, and NGO) that co-create scalable solutions aligned with the United Nations Sustainable Development Goals and the broader mission of social impact.

Core Activities

1. Program Governance & Strategic Collaboration

- **Held weekly and biweekly governance meetings with key partners including IKP, Tinker Labs, Tangent Tech Solutions, Revamp, and Titan to ensure effective coordination and program alignment.**
- **Strengthened inter-organizational communication to streamline program implementation and ensure alignment with impact goals.**

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2. Project Pipeline & Vetting

- **Received and reviewed a total of 3,200 project submissions between April 2023 and March 2024.**
- **Conducted initial project screenings and provided constructive feedback to guide refinement and eligibility for further support.**

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3. Evaluation & Impact Tracking

- **Designed and applied comprehensive evaluation frameworks to monitor both quantitative and qualitative progress.**
- **Assessed overall program effectiveness and tracked individual participant development using data-driven insights.**

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4. Fellow Engagement & Capacity Building

- **Conducted regular review and mentorship meetings with fellows and partner organisations to provide ongoing support.**
- **Organised design thinking workshops facilitated by TinkerLabs and shared IDEO's online masterclasses as supplemental learning tools.**

- **Promoted peer learning and skill-building through collaborative sessions.**

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5. User-Centric Program Design

- **Carried out detailed needs assessments to understand the emotional and functional requirements of students and stakeholders.**
- **Identified gaps and co-developed targeted interventions to better address user needs and enhance program delivery.**

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6. Mentorship & Incubation Support

- **Finalised new incubation partnerships to provide tailored one-on-one mentorship.**
- **Launched city-specific chapters to foster local ecosystems for social innovation and entrepreneurship.**
- **Delivered ongoing incubation support through IKP and new partners, including expert mentorship from a curated network of professionals and TinkerLabs faculty.**

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7. Project Development & Showcase

- **Supported students through iterative prototyping and real-world testing guided by hands-on mentorship.**
- **Facilitated user feedback loops to refine solutions and provided platforms to showcase successful projects via presentations and digital storytelling.**

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8. Workshops, Training & Program Execution

- **Conducted skill-building workshops and masterclasses to enhance participant capabilities.**
- **Ensured seamless coordination with partner organisations for smooth execution.**
- **Collected and analysed program data to guide strategic decision-making and continuous improvement.**

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9. Ecosystem Building & Institutional Partnerships

- **Nurtured sustained partnerships with academic institutions and industry stakeholders to broaden the program's reach and long-term impact.**

Key Partners and Roles

Titan	• **Launched the Design Impact (DI) Movement as a flagship initiative under the organization's CSR portfolio.** • **Positioned the DI Movement as a platform to empower young changemakers, drive social innovation, and cultivate an entrepreneurial mindset across India.** • **Led the strategic planning for the initiative, offering oversight, financial support, access to networks, and brand leverage to ensure its success.** • Strategic inputs for all partners and overall shaping of the program • Collaborations with core and other partners. Chalking out of scope of work and value adds of each partner involved.

Sattva	• **Facilitated seamless communication and collaboration between key partners including Titan, TinkerLabs, IKP, DeepSense, Tangent Tech, and others.** • **Served as the Project Management and Governance Partner for the Design Impact Movement, ensuring smooth execution across all stakeholders.** • Managed **project timelines and maintained a strong focus on aligning all efforts with the program's core mission of creating social impact.** •
TinkerLabs	• Provided human-centred design and prototyping training, guiding students from initial concept to low-fidelity prototype. • Responsible for in-depth student outreach and immersive skill-building workshops in selected colleges (specially design and engineering). • Organised roadshows, orientation sessions, and webinars to attract a large number of student applicants. • Built long-term relationships with college faculty, enhancing program credibility and ensuring sustained engagement.
IKP	• Organised orientation sessions and webinars to attract large numbers of student applicants. • Provided basic mentor matching and potential pathways for deeper incubation support to selected finalists.
DeepSense	• Managed social media outreach for both the Design Impact Awards and the DI Movement.
Tangent Tech	• Built and maintained the web platform where students submitted proposals, prototypes, and other required documentation.

CHAPTER 2: RESEARCH METHODOLOGY

A. Goals and Importance of the Impact Assessment

- To evaluate how effectively the DI Movement has met its overarching goal of encouraging social entrepreneurship and innovative problem-solving among college students.
- To identify and quantify the immediate and long-term impacts of students' innovations—whether through prototypes developed, user adoption, or extended incubation opportunities.
- To provide transparent documentation of how resources (funding, mentorship, platforms) are allocated and leveraged, ensuring alignment with Titan's CSR objectives and wider development goals.
- To generate insights that guide future program refinements, including better alignment with academic schedules, deepened stakeholder collaboration, and structured pathways for post-program support.
- To identify success stories and challenges, forming a body of learning that can be adapted to other regions, educational institutions, or partner networks interested in launching similar initiatives.

B. Data Gathering Approaches

- **Surveys and Questionnaires:** Qualitative studies were administered to participating students and faculty, capturing metrics such as participation rates, perceived skill improvements and satisfaction levels with program components.
- **One-on-One Interviews:** In-depth interviews were conducted with key stakeholders—students, mentors, and implementing partners—to collect qualitative insights into user experiences, challenges, and success factors.
- **Case Studies:** Multiple case studies were developed focusing on specific student-led projects. These examined the entire lifecycle of the innovation—from ideation and prototyping to user feedback and potential market integration.

- **Partner Feedback Sessions:** Regular meetings and governance calls with Sattva, Titan, TinkerLabs, and IKP provided real-time updates, ensuring that feedback on program progress and platform performance was consistently recorded and reviewed.
- **Secondary Research and Documentation:** Relevant program records—such as project proposals, workshop materials, and governance call minutes—were analysed for cross-verification of data and deeper context.

C. Methods of Analysis

- **Descriptive Analysis:** Survey responses and basic participation data (e.g., number of applications, prototypes developed) were summarised to give an overview of program reach, demographic distribution, and engagement levels.
- **Qualitative Study:** Interviews and case studies were analysed to identify recurring themes—such as user-centric innovation, challenges in incubation, and collaboration effectiveness. This helped distil complex narratives into actionable insights.
- **Comparative Evaluation:** Data from the Design Impact Movement was compared against relevant benchmarks (e.g., similar student innovation programs) to gauge the uniqueness of outcomes, measure success rates, and suggest improvements.
- **Triangulation:** Feedback from multiple sources—participants, mentors, and program managers—was cross-checked to validate findings. This multi-perspective approach aimed to minimise bias and ensure a more holistic understanding of the program's impact.
- **Outcome Mapping:** Some of the high-potential projects were tracked from ideation to prototype refinement, allowing evaluators to trace specific milestones and measure how effectively program interventions (mentorship, workshops, platform support) contributed to tangible progress.
- **Study Tools**

Primary data was collected using qualitative tools.

Ensuring Commitment to Research Ethics

- **Anonymity**

Anonymity refers to not revealing the identity of the respondents. This research study strictly does not reveal the identity of respondents unless the same is warranted for the illustration of success stories or case studies. After the research was completed, the study did not reveal which individual respondents answered which question in what manner. The results were revealed only as an aggregate, so no one would be able to single out the identity of a particular respondent. This was required to not break the trust of the respondent by not revealing the individual's identity.

- **Confidentiality**

Research subjects participate in the process only based on the trust that confidentiality is maintained. Hence, the research would not reveal any data regarding the respondents for purposes other than the research study.

- **Non-Maleficence**

Research would not lead to harm to the research subjects. This study ensured that the respondents were not harmed in any way.

- **Beneficence**

Any research study should have some benefits for the respondents. This research study also ensures that individuals, groups, and communities benefit, and their well-being is enhanced.

- **Justice**

Justice refers to being fair to all. This research study ensures equal treatment of all its research subjects and no biases or prejudices towards any group based on social stereotypes or stigma associated with being a member of a certain group or class.

CHAPTER 3: KEY METRICS AND ANALYSIS

A. Main Metrics Used for Evaluation and Their Results

1. **Number of Applications Received**

- 3,200 project applications were submitted between April 2023 and March 2024.
- Significance: High application numbers reflect the program's extensive outreach and the strong interest among college students in engaging with social innovation.

2. **Number of Projects Selected for further engagement and Student Participation**

- 57 new projects were selected and developed by 147 student innovators.
- Significance: This conversion rate (from 3,200 applications to 57 selected projects) indicates rigorous screening, ensuring only the most viable, impact-focused ideas progress.

3. **Platform Performance and Issue Resolution**

- Out of 77 identified platform issues, 60 were successfully resolved during the program cycle.
- Significance: Demonstrates tangible improvements in tech infrastructure, allowing smoother submission processes and better user experience.

4. **Organic Sign-Ups and Outreach**

- 6,785 organic sign-ups through monthly campaigns (in partnership with Revamp).
- Significance: Highlights the effectiveness of targeted promotions and the program’s ability to attract interest independently of paid advertising or direct interventions.

5. **Workshops and Governance Meetings**

- Multiple weekly and biweekly governance meetings were held with partners (IKP, TinkerLabs, Tangent Tech Solutions, Revamp, and Titan).
- Significance: Ensures continuous oversight, real-time problem-solving, and alignment among all program stakeholders.

6. **Mentorship and Training Sessions**

- Regular workshops and design thinking sessions delivered by TinkerLabs.
- Significance: Builds participant capacity in user-centred research and rapid prototyping, thereby improving the quality of solutions proposed.

7. **Incubation and Partnerships**

- New incubation partnerships were finalised, and city-wise chapters were established.
- Significance: Indicates expansion of the program's support ecosystem, widening the scope for 1:1 mentorship, scale-up, and stronger local networks.

B. Secondary Metrics Providing Further Impact Insights

1. **Attrition and Project Continuity**

- Dropout Rates / Retention: Though not quantified in the main findings, dropout data were tracked qualitatively through regular partner feedback. Observations suggested that academic workload often prompted partial attrition.
- Insight: Highlights the need for better alignment with college calendars and incremental follow-up strategies (e.g., mid-semester check-ins) to maintain engagement.

2. **Diversity and Geographic Reach**

- While the program targeted tier 2 and tier 3 colleges, as well as established institutions, data on the geographical spread (e.g., North vs South India) was assessed to ensure inclusive participation.
- Insight: Ensures the initiative reaches underrepresented student communities, fostering equitable innovation opportunities nationwide.

3. **Prototype Maturity and User Adoption**

- Prototype Readiness: Tracked through workshop evaluations and mentor feedback (e.g., user testing milestones, level of prototype detail).
- Insight: A high maturity level implies a greater likelihood of long-term sustainability, with some prototypes moving on to advanced incubation.

4. **Mentor Engagement and Satisfaction**

- Frequency of Check-Ins: Regular calls and digital feedback loops measured mentor-participant interaction.
- Insight: Confirms that active, ongoing mentorship correlates with higher-quality iterations and stronger final pitches.

5. **Community-Level Indicators**

- Household and Community Benefits: Assessed via case studies (e.g., repurposed byproduct to boost incomes for broom-making families or inclusive board games for VI communities).
- Insight: Gives qualitative context to how student solutions address real-life pain points, showing potential for local-level social and economic empowerment.

6. **Institutional Partnerships**

- New Collaborations: The program monitored the rise of academic and NGO partnerships formed post-workshop or during incubation.
- Insight: Evaluate how well DI Movement's ecosystem fosters an ongoing culture of social innovation within and beyond partner institutions.

7. **Long-Term Impact and Scale**

- Incubation Continuity: Some projects continued beyond the program cycle, receiving seed funding or advanced mentorship from IKP or other incubators.

- Insight: Reflects the DI Movement's broader role in creating a pipeline where select ventures can mature from campus prototypes to legitimate social enterprises.

"When we first embarked on this journey to design an inclusive board game for visually impaired users, our vision was guided by deep empathy, personal experiences, and the insights we gained through extensive interactions with visually impaired students and educators. Through the support of the DI Movement and invaluable mentorship, we were able to transform our ideas into reality. Each stage of our design process—from empathising with users at blind schools, prototyping tactile features, and rigorously testing our product—reinforced our commitment to accessibility and inclusion. One particularly powerful moment came when a visually impaired student defeated me in a test round, vividly demonstrating our game's success in levelling the playing field. While challenges such as balancing physical dimensions, managing tight schedules, and ensuring cost-effectiveness tested our resolve, the collaborative environment we fostered as teammates and roommates kept us inspired. We remain deeply optimistic and committed to refining our product further, expanding its reach, and scaling our solution to create tangible, lasting social impact." – Charvi, Shanu, and Sneha, 3rd-Year bachelor's in design student, Indian Institute of Information Technology, Design & Manufacturing, Jabalpur

DI Movement Web Platform: A Seamless Digital Hub for Social Innovation and Youth Entrepreneurship

Platform Overview: Design Impact Movement

The Design Impact Movement platform, an initiative by Titan, offers an end-to-end digital interface designed to empower social impact entrepreneurs. The platform is built to facilitate youth-led innovation and entrepreneurship by providing a guided instructional experience focused on human-centred problem-solving.

1. User Onboarding and Access

- **Registration and Sign-In:**

The platform provides a clean, minimal sign-up and sign-in interface. Users can register using basic details, with an option for Google login. The system incorporates prompt email and/or OTP verification to ensure secure access.

- **Intuitive Design:**

After login, users see a clean, well-organised interface that directs them to essential features and functions without the need for detailed onboarding guidance.

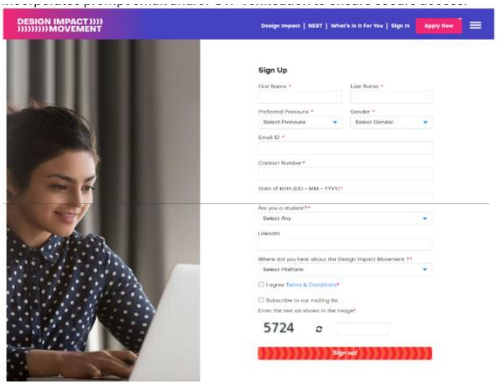

Fig 1. Sign up page

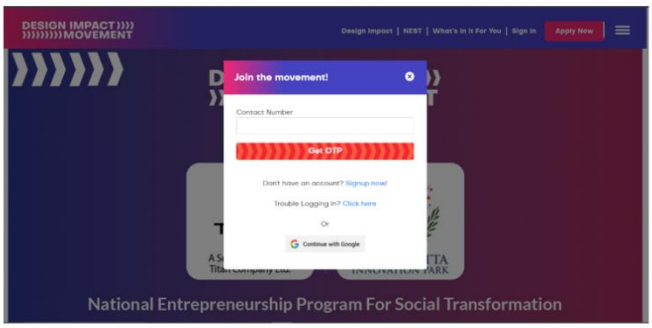

Fig 2. Sign in dialogue box

2. Dashboard and Interface Design

- **Centralised Navigation:**
  Upon logging in, users encounter a well-structured dashboard that centralises access to key aspects.

- **Responsive Layout:**

  The website has been tested on desktop browsers such as Chrome, Firefox, and Edge, as well as on Android mobile devices. The responsive design adapts to screen size on mobile to optimise space.

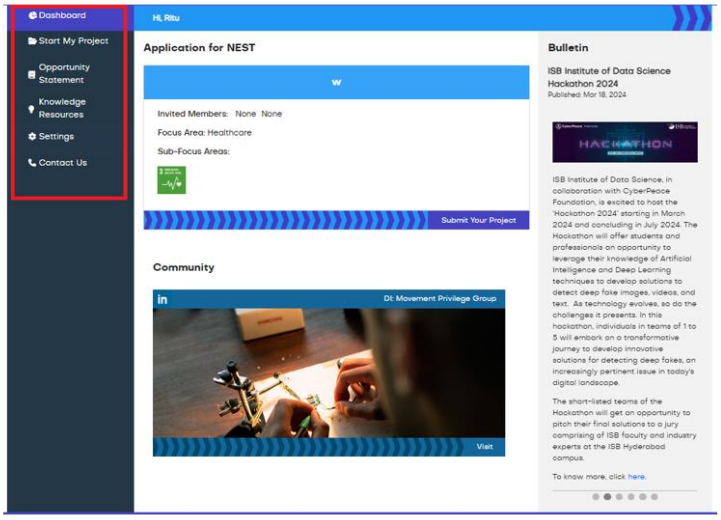

Fig 3. Dashboard Interface

3. Learning Modules and Knowledge Reinforcement

- **Structured Learning Flow:**

  The platform is designed to educate and empower users through a series of learning modules focused on human-centred design and social entrepreneurship.

The modules are divided into two main sections: "Masterclasses" and the "Design Thinking Module." Each section features comprehensive video content covering a wide range of topics. Each module includes video content followed by quizzes that assess and reinforce the learning.

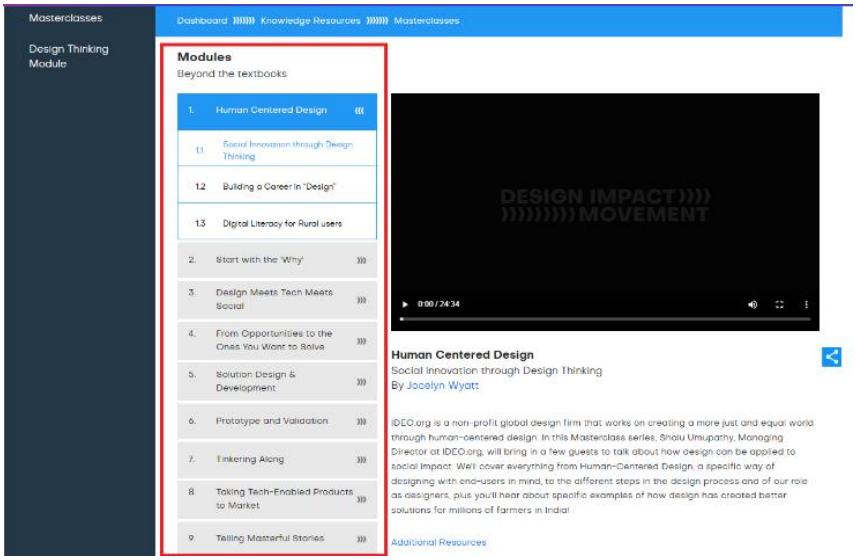

Fig. 4 Masterclasses Modules

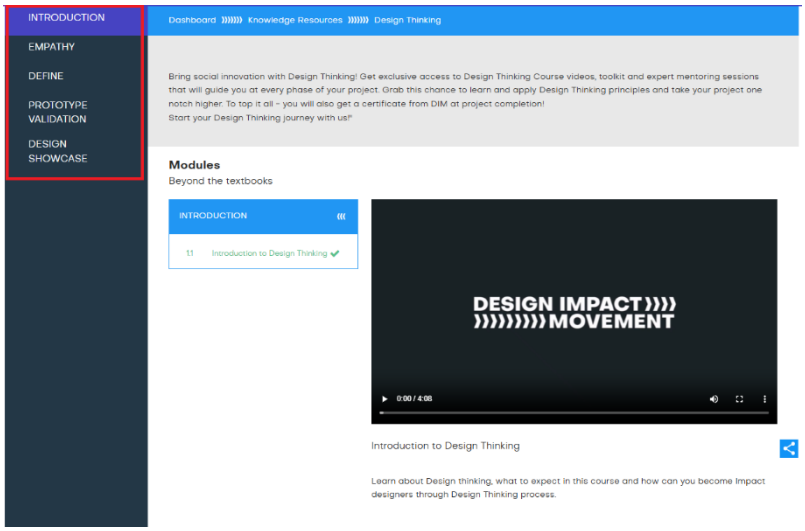

Fig. 5 Design Thinking Modules

The quizzes are integrated as modal overlays, allowing users to continue their learning journey without being directed to another page, thereby eliminating navigation delays, and providing a smoother learning experience.

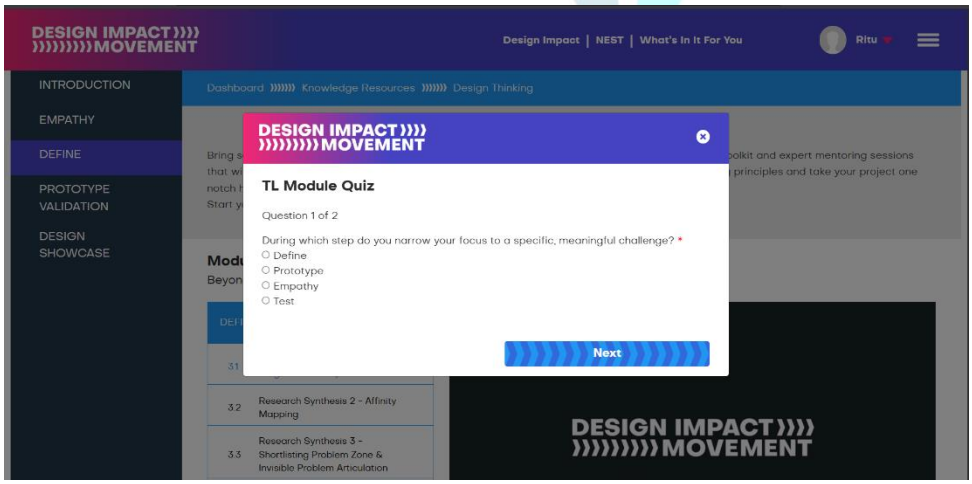

Fig.6 Quiz after each module

4. Core Features and Tools

- **Project Application:**

Social impact entrepreneurs can use the platform to submit their project ideas through

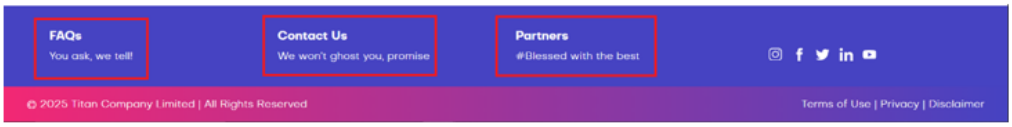

Fig.7 Warm and encouraging tag lines

a guided application process (featuring pre-loaded questions that facilitate clear and consistent communication of project details for all participants). Additionally, the platform encourages participants to reach out to the project team using warm and inviting tag lines, listed at the bottom of every page, for their “FAQs” and “Contact Us” sections.

- **File upload**

  Users can upload documents and images instantly with a single click, without any noticeable delays.

Fig. 8 File upload

- **Theme-wise opportunity ideas:**

The platform offers a curated list of 24 opportunity ideas designed to support young social impact entrepreneurs in identifying and addressing critical challenges. These ideas are organised under three broad, high-impact themes—Environment, Healthcare, and Agriculture and Livelihood. Each theme presents real-world problems and innovation pathways to spark entrepreneurial thinking and help young

changemakers develop scalable, sustainable solutions aligned with pressing social needs.

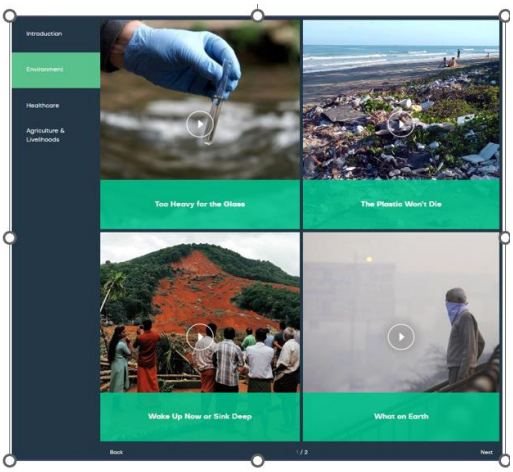

Fig.9 Opportunity Statements

5. Technical Performance Indicators

- **Performance Testing:**

  The website has been tested on Google Page Speed Insights, which shows a favourable load time and responsiveness. While exact numbers vary by environment, the system has proven to be optimised for seamless user interaction.

Page Load Time for desktop and mobile has shown efficiency in tests with a Speed Index of 0.8s.

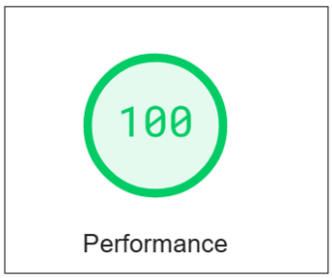

Fig.10 Performance score (out of 100) on Google PageSpeed Insights

Fig.11 SEO score (out of 100) on Google PageSpeed Insights

(Note: Specific performance metrics such as load times and file upload durations are based on test instances. For complete accuracy, please refer to live test results, as these can vary with network and system conditions.)

6. Community and Bulletin Integration

- **Resource and Community Updates:**

  The platform includes bulletin sections to keep users informed of new opportunities, such as government startup schemes, the business environment of the country, etc. This section also helps the users to stay connected with community activities, partnerships, and real-world events that could further support their projects.

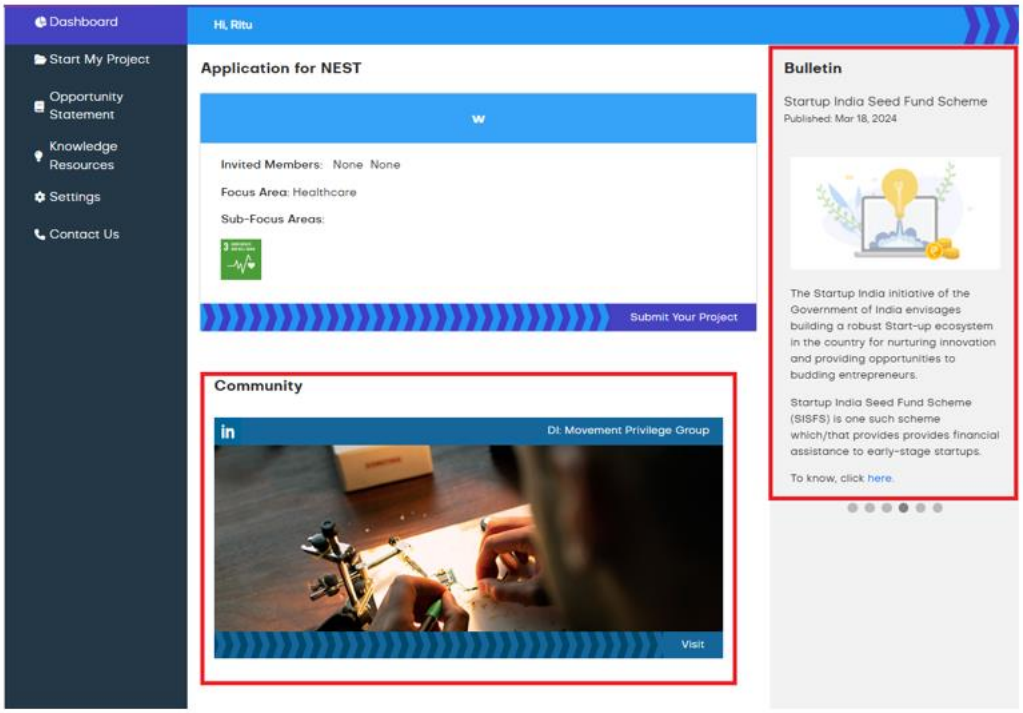

Fig 12. Community and Bulletin section

The Design Impact Movement platform offers a seamless and intuitive layout, clear navigation, and thoughtful design elements that make it easy for aspiring social entrepreneurs to explore learning modules, submit project proposals, and engage with the community. By prioritising user experience and comprehensive learning resources, the platform simplifies the journey of aspiring social impact entrepreneurs and encourages participation in driving social change.

CHAPTER 4: TITAN DI MOVEMENT PROGRAM DESIGN AND THEORY OF CHANGE

- The Theory of Change for the Titan DI Movement is based on the idea of **Creating an enabling ecosystem for young minds to design for social needs ; More talented young professionals making a career choice in social design; Creation of innovative mindsets with social conscience. Increase in Social Entrepreneurship and societal problems being addressed.**

A. Theory of Change:

Inputs	Activities	Outputs	Outcomes	Projected Impacts
- Funding of ₹1.9 crore (Titan CSR budget) - Human Resources (Sattva project managers, TinkerLabs trainers, IKP mentors) - Technical Platform (Tangent Tech Solutions)	- Conducted Governance Meetings and Workshops (weekly/biweekly with IKP, TinkerLabs, Tangent Tech Solutions, Revamp, and Titan). - Capacity Building: Design thinking sessions, IDEO masterclasses, skill-building workshops.	- 3,200 applications submitted. - 57 new projects developed by 147 student innovators. - 6,785 organic sign-ups (via monthly campaigns). - 60/77 tech issues resolved on	- Enhanced Student Capabilities: Hands-on innovation, design thinking, prototyping. - Strengthened Networks: Robust linkages among Titan, NGOs, academic institutions, and students.	- Improved Livelihoods and Economic Opportunities: Student innovations can spur new revenue streams for beneficiaries. - Sustainable Social Ventures: Many prototypes transition to full-fledged startups or get incubated. - Systemic Change: A culture of social

- Industry & Academic Partnerships (college E-cells, incubators, NGOs, etc.) - Brand Recognition (Titan's credibility and outreach)	- Screening & Selection of student projects (3,200+ submissions). - Mentorship & Incubation: Technical guidance, prototype testing, feedback loops, city-wise chapters. - Tech Platform Maintenance: Handling submissions, resolving issues, and managing server load. - Community & Stakeholder Engagement: Regular check-ins, user interviews, needs assessments.	the DI Movement platform. - Ongoing workshops (design thinking, human-centred research). - City-wise Chapters formed to deepen local networks. - New Incubation Partnerships finalised.	- Higher Project Viability: Regular feedback and mentorship boost prototype maturity and potential market readiness. - Inclusive Ecosystem: Outreach to Tier 2/3 colleges ensures geographical spread and equity in opportunity. - Better Tech Infrastructure: Seamless user experience encourages further participation.	entrepreneurship & design thinking integrated into higher education. - Scalable Community Impact: Solutions addressing healthcare, environment, or livelihoods replicated in multiple regions. - Long-Term Innovation Pipeline: Ongoing partnerships, credit-based curricula, and expanded outreach reinforce continual ideation and impact.

B. Implementation Strategy:

Phase	Time Frame	Key Objectives	Main Activities
Phase 1: Outreach & Call for Applications	2 Months	- Generate awareness - Invite applications	- Conduct webinars with colleges, NGOs, and e-cells. - Launch ad campaigns, social media posts, and offline promotions. - Focus on key problem areas: Environment, Healthcare, Agriculture, Livelihoods.
Phase 2: Screening & Capacity Building	3 Months (post-application window)	- Evaluate submissions - Shortlist top ideas - Build capacity through design-thinking workshops	- Initial screening of applications for relevance and feasibility. - Conduct virtual improvement workshops on design thinking, user-centric research. - Assign mentors to guide shortlisted teams in refining proposals.
Phase 3: Technical Incubation	6–7 Months	- Incubate ~100 teams - Develop prototypes and business plans	- Host an orientation workshop on structured design processes. - Provide periodic reviews and mentorship (prototype testing, user feedback).

			- Assist with business model development and user testing. - Shortlist top-performing teams for the next phase.
Phase 4: Business Incubation	Varies (team-dependent)	- Scale top ventures - Achieve market readiness & pursue funding	- Integrate teams into the IKP ecosystem or new incubation partners (workspace, investor connects). - Offer Go-to-Market strategy support and regulatory guidance. - Organise pitch showcases to angel investors or government bodies.
Phase 5: Expansion & Policy Alignment	Ongoing	- Establish city-based chapters - Foster broader adoption and policy synergy	- Launch city-wise chapters to deepen local networks. - Explore credit-based workshops in college curricula to sustain involvement.

C. Monitoring and Evaluation

1. **Real-Time Monitoring**:
   - Weekly or biweekly governance calls to track participation, program milestones, and emerging issues.
   - Tech platform analytics (e.g., submission status, user feedback, server performance) for ongoing oversight.

2. **Key Performance Indicators (KPIs)**:
   - **Participation**: Number of applications, active student teams, and dropout rates.

- **Innovation Progress**: Prototype completion rate, user acceptance feedback, readiness for incubation.
- **Mentorship Engagement**: Frequency and quality of mentor-student interactions, direct feedback from mentors.
- **Tech Platform Metrics**: Number of resolved issues, uptime, and user satisfaction with the submission process.

3. **Data Collection Methods**:
   - **Surveys & Interviews**: Evaluate student learning, mentor satisfaction, and community acceptance of prototypes.
   - **Case Studies**: Document success stories or unique challenges, offering deeper qualitative insights.
   - **Comparative Analysis**: Benchmark outcomes against similar programs to measure uniqueness and efficacy.

4. **Reporting and Learning**:
   - **Periodic Reviews**: Intermediate and final reports to share progress, troubleshoot barriers, and capture lessons learned.
   - **Continuous Improvement**: Use results to refine the program's strategy, inform policy recommendations, and shape future expansions (e.g., tier 2/3 institution reach, city-based chapters).

By grounding each phase in a structured Theory of Change and systematically monitoring progress at every step, the Titan DI Movement ensured that investments (inputs) and activities aligned with tangible outputs and longer-term social impacts — which created a thriving pipeline of youth-led innovations to solve India's most pressing development challenges.

D. Partner Feedback and Key Insights

1. **Extensive Yet Targeted Outreach**
   - While broad coverage increased the applicant pool, deeper, sustained engagement—especially in Tier 2 and Tier 3 colleges—proved crucial for refining ideas and preventing high dropout rates.
   - Key Insight: A balance between scale (reaching many colleges) and depth (providing intensive capacity-building) is essential for long-term impact.

2. **Importance of Academic Calendar Alignment**
   - Students' academic obligations at times clashed with DI Movement activities, impeding consistent progress and mentorship follow-through.
   - Key Insight: Mapping major program milestones to semester schedules, exam breaks, or holidays can boost sustained participation.

3. **Need for Structured, Ongoing Mentorship**
   - Multiple partners observed that one-time workshops are less effective than recurring sessions, especially when students face technical or market-related hurdles.
   - Key Insight: Establishing a robust mentorship ecosystem, including scheduled reviews, open Q&A forums, and dedicated expert pools, significantly enhances prototype maturity and student confidence.

"From my experience overseeing the DI Movement, one of our biggest learnings is helping students balance their academic loads with the demand for sustained product development. We have addressed this by coordinating closely with college administrators and embedding our workshops right into the curriculum. I have also noticed that initial enthusiasm does not always translate into long-term engagement. To mitigate drop-offs, we conduct 'ask-me-anything' sessions early on and make sure everyone has a clear idea of the time commitment required. Another focus has been building DI Movement's brand visibility. We have learned that competing with hackathons and similar programs means adopting a city-based approach—rather than limiting ourselves to single-college events—so we can strengthen the ecosystem at a regional level. Of course, even when students have an impressive concept, getting it to a scalable prototype is no small feat. That is why we have expanded our mentorship

network to include product design, supply chain, and impact investment experts who can guide teams through the sustainability and manufacturability challenges. Finally, what sets this initiative apart is our adaptability. Nothing is set in stone—our timelines, roles, and workshop models are constantly refined based on real-time feedback. This flexible approach has been key to maintaining relevance, effectiveness, and the continuous growth of student-led solutions." – Venkat Sai, Consultant and Program Manager, Sattva Consultancy

4. **Expanded Stakeholder Network**
   - Partners like IKP and TinkerLabs repeatedly stressed collaboration across corporate, government missions and academic bodies.
   - Key Insight: An integrated, multi-stakeholder approach strengthens the overall program by pooling resources, diversifying expertise, and promoting cross-sector innovation.

5. **Potential for City-Based Chapters and Policy Influence**
   - Suggestions emerged for localised "chapters" that could host meetups, pitch events, or hackathons, making the program more accessible and strengthening peer networks.
   - Key Insight: Local chapters can serve as hubs for sustained community engagement, bridging the gap between a central online platform and ground-level incubation activities. Policy endorsements or partnerships could further legitimise and scale these efforts.

6. **Metrics Beyond Participation**
   - Partners emphasised measuring deeper indicators—such as prototype quality, user adoption, and real-world problem-solving—to gauge true impact.
   - Key Insight: While the number of applications is a useful starting metric, long-term success requires tracking actual venture creation, social benefits, and market traction.

"DI Movement's workshops and mentorship sessions have been invaluable, but our faculty sometimes wish for additional support—whether it is from material scientists or specialists in sustainable processes—to help push promising concepts toward viable manufacturing. We believe that 'Train the Trainer' programs could allow more faculty

to confidently integrate these ideas into the wider curriculum. Ensuring continuity after students graduate or begin internships sometimes becomes challenging. When they move on, their projects can stall before fully maturing. I would love to see an extended engagement model—perhaps by incorporating DI projects into final-year or "Graduation Projects"—to help teams refine and test their prototypes with ongoing support from Titan, TinkerLabs, and other partner organisations, thus enabling stronger, more field-ready outcomes. Looking forward, my hope is to incorporate SDG-focused frameworks more deeply into our design courses to encourage both educators and students to adopt ethical and sustainable approaches. I would love to see students evolve their ideas beyond the semester, formally incubating their social ventures. By creating pathways for extended engagement and institutional support, we can help them transform classroom prototypes into impactful solutions that address real-world needs—and that is the true promise of the DI Movement." - Dr. Preetha Bhattacharya Hussain, Professor and Chairperson of the Foundation Program, NIFT

CHAPTER 5: GENERALISATION OF OUTPUTS AND OUTCOMES

The 57 selected projects demonstrate a powerful wave of youth engagement and participation, with college students from diverse disciplines—Design, Engineering, and more—actively developing impactful ideas. This broad network of budding innovators reflects a collective commitment to addressing societal challenges through practical, forward-looking, and inclusive solutions—underscoring the transformative potential of India's next generation in driving meaningful change.

Sl. No.	Project Title	Name of College/Organisation	Number of Students	Discipline
1	Gyro Controlled Water Cannon	SRM VEC	3	Engineering
2	Footguard - Smart Shoes for Foot Ulcer Prevention	SCET, Kodakara	4	Engineering
3	Waste2Wealth	SIES GST	4	Engineering
4	Opti Fit	NID, Haryana	1	Design

5	Ensuring Safety in Textile Dyeing Practices	NIFT Mumbai	3	Design
6	Rider Bag	NIFT	3	Design
7	Wricks: Building For a Sustainable Future	Angirus (DPIIT recognised startup)	2	Engineering
8	Auta - Accessible Universal Transportation for All	DTU	1	Engineering
9	Dumpcrete	NLU Delhi	1	Others
10	Cprx	Parul University	2	Design
11	Biogas Plant	MIT Institute of Design Loni	2	Design
12	Rinki	MIT Institute of Design	4	Design
13	Vaayu - A Waste Management Solution	MIT Institute of Design Loni	2	Design
14	Macchi Vaale	MIT Institute of Design	2	Design
15	Makkurai	Karpagam Institute of Technology	3	Engineering
16	Padverse	Institute of Aeronautical Engineering	2	Engineering
17	Jalshuddhi	National Institute of Design, Haryana	1	Design
18	Arsenic Removal Unit	MAHE Manipal	2	Engineering
19	Ragpickers In Delhi	NIFT, New Delhi	2	Design
20	Baadi	National Institute of Design, Haryana	3	Design

21	Roadside Cobbler - Mochi	MIT Institute of Design	2	Design
22	Garments For Cement Workers	MIT ADT, Institute of Design	2	Design
23	Maccha - Draining and Cooling Table for Local Fish Vendors	MIT Institute of Design	2	Design
24	Broom Making Process	MIT Institute of Design	4	Design
25	Impulse	Backyard Creators	2	Engineering
26	Transforming Textile Waste Into 3D Printed Mud Block	Pune University	1	Engineering
27	Banraw Board	Kongu Engineering	4	Engineering
28	How Might We Help Reduce the Risk of Work-Related Musculoskeletal Disorders in Tyre Cutting Units?	IIIT DM Jabalpur	2	Engineering
29	Femcare	SIT	2	Engineering
30	Sensock - A Smart Solution for Parkinson's Disease	BMSCE	4	Engineering
31	Aquasavex	KCG Tech	4	Engineering
32	Vajra Rakshak - Recoil PPE	NID, Haryana	1	Design
33	Multipurpose Agro Vehicle	IESCE	4	Engineering

34	Safety Vest	NIT Warangal	1	Engineering
35	Writing Assist Module for Dyslexic People	Thiagarajar College	3	Engineering
36	Step Solar Still	AITM Belagavi	4	Engineering
37	Modular Wheelchair	Amrita School of Engineering	2	Engineering
38	Eco-Friendly and Affordable Cooler	Pune University	2	Engineering
39	Emergency Stretcher Redesign	IIITDM, Jabalpur	1	Engineering
40	Scavengex	Anna University	2	Engineering
41	Ezam	IIITDM Jabalpur	3	Engineering
42	Earlysense_Updated	IIM Kashipur	3	Others
43	Flora Sonic Crew	Pune University	4	Engineering
44	AI-Enabled Water Well Prediction	VIT, Pune	4	Engineering
45	Wholistic Solution for On-site Workers	BNCA, SPPU	2	Engineering
46	Board Games for the Visually Impaired	MIT Pune	2	Engineering
47	School On Wheels	MIT Institute of Design	4	Design
48	Chaigaram	MIT Institute of Design	4	Design
49	Double Check	National Institute of Fashion Technology, Mumbai	3	Design

50	Capybra: Redesigning Post-Op Surgical Bra for Cancer Patients	NIFT	4	Design
51	Block Print Tools	NIFT	4	Design
52	Vanrakshak	NID, Haryana	1	Design
53	Terratester	NID, Haryana	1	Design
54	Air_Calibre	Dwarkadas J Sanghvi College of Engineering	4	Engineering
55	Skin Cancer Detection	VIIT, Pune	3	Engineering
56	Guardian Angel	VIT, Pune	4	Engineering
57	Decentralised On-site Waste Management	Pune University	1	Engineering

The key observations from this impact assessment study revealed that, from inclusive design to economic empowerment, each project and partner insight emphasised the synergy between user-centric research, affordability, and meaningful social return on investment. Additionally, whether tackling a visually impaired board game or upcycling broom waste, mentor engagement and cross-disciplinary collaboration remain consistent success factors. Finally, city-wise chapters, broad academic alignment, and deeper partner collaboration are vital for creating supportive environments where early-stage innovations can mature and scale.

Common Themes	**Examples from Case Studies**	**Feedback from Partners**	**Analytical Interpretation**
1. User-Centric Design & Empathy	- **Inclusive Board Game (VI Users):** Thorough user research (blind	- **TinkerLabs & Titan:** Stressed "falling in love with the problem"	By centring solutions on real user needs (e.g., VI players, underprivileged

	schools, interviews) led to tactile and auditory features. - **School on Wheels:** Emphasis on child-friendly layouts, circle seating, and direct interaction with children.	approach and iterative user testing.	children), prototypes achieve higher acceptance and social impact. The approach consistently enhanced community buy-in and shaped prototypes that address daily challenges with empathy and practicality.
2. Sustainability & Environmental Focus	- **Decentralised Biogas Digester:** On-site waste management, potential to reduce landfill reliance. - **Broom Maker Material Innovation:** Upcycling palm-leaf waste into sellable products, minimising environmental harm.	- **Sattva:** Highlighted the importance of circular design in attracting CSR funding and policy interest. - **Titan:** Viewed eco-friendly prototypes as aligned with broader sustainability goals for long-term viability.	Student ventures that integrate green principles are more likely to attract stakeholder support. The focus on resource efficiency, upcycling, and local production resonates with partners' emphasis on scalable sustainability.
3. Resource-Limited	- **School on Wheels:** Designing low-cost,	- **TinkerLabs:** Affirmed that	Prototypes flourish when they remain

Contexts & Affordability	stackable furniture and reusing second-hand buses. - **Broom Maker Tech Upgrades:** Low investment changes (elevated motor, safer setup) to improve efficiency without big capital expense.	simple, budget-friendly solutions often have higher adoption rates and longevity in resource-constrained communities.	cost-effective and practical for end users with limited disposable income or infrastructure. Keeping solutions modular and minimal fosters adoption, especially among low-resource beneficiaries and under-resourced institutions.
4. Importance of Mentorship & Collaboration	- **Mentorship for Biogas Prototype:** Founders and engineers provided real-time feedback, bridging academic theory and practical constraints. - **TinkerLabs Integration:** Regular design-thinking workshops guiding each project phase.	- **TinkerLabs:** Recommended iterative check-ins and Q&A sessions to boost sustained engagement.	Structured, ongoing guidance significantly accelerates learning curves and ensures prototypes mature beyond conceptual stages. Frequent mentor feedback helps student teams overcome complex hurdles (engineering, finance, scale) and fosters stronger, more impactful innovations.

5. Academic Alignment & Flexibility	- **NIFT Collaboration:** Projects integrated into a "Design & Society" module, with mid-semester workshops and final presentations. - **Other Colleges:** Prototypes are often paused due to graduation timelines or internship schedules.	- **NIFT:** Urged advanced notice and alignment with semester start/end times for meaningful progress. - **Sattva:** Recommended "credit-based workshops" to embed DI Movement projects in formal curricula, sustaining academic interest.	Close coordination with faculty and adjusting program milestones to match academic calendars prevents unfinished prototypes and student dropout. Embedding project credits and final year "Graduation Projects" can extend development cycles and deepen impact.
6. Scalability & Ecosystem Growth	- **City-Based Chapters:** Proposed for scaling the "School on Wheels" concept and nurturing local ecosystems. - **Broom Maker Model:** Easily replicated in other rural communities or crafts.	- **Titan:** Stressed the need to standardise successful prototypes to replicate across districts or states. - **TinkerLabs:** Saw city-level networks as vital for consistent brand presence, sponsor	When prototypes prove repeatable and adapt well to different contexts, they can spread across wider geographies. Partnerships with incubators, local chapters, and broad stakeholder alliances create an environment ripe for scale, policy

		links, and alumni outreach.	influence, and cross-sector synergy.
7. Socio-Economic Impact & Livelihoods	- **Broom Maker Innovation:** New income streams from upcycled leaf material, preserving cultural craft. - **Biogas Systems:** Minimised waste hauling costs, possible savings on LPG for households/hostels.	- **Sattva:** Valued solutions that directly enhance local income, reduce environmental harm, and preserve the dignity of labour.	Projects that tangibly boost earnings, reduce drudgery, or open new job opportunities demonstrate immediate social ROI—key to attracting further partnerships and motivating end users. Integrating market considerations ensures longevity and helps prototypes transition into viable ventures.

"When Suvrat and I started working on our biogas digester project, our main aim was simple yet challenging—to create an affordable, scalable, and genuinely user-friendly solution for managing organic waste in urban areas. Witnessing the huge amount of food waste generated daily at my own hostel, I felt a strong urge to address this issue practically. Collaborating with Chakrakar Lifestyle Solutions and guided by the DI Movement and TinkerLabs, we approached the challenge with a deeply user-centred mindset. Throughout the project, our interactions with kitchen staff, Safai Karam Charis, and domestic users provided invaluable insights. It became clear to us that dignity, ease of use, and humanised interactions were critical in encouraging widespread adoption. Each small innovation—like reshaping the digester's feeding holes to minimise splashback, creating an aesthetic dome-shaped design for better

functionality and appeal, and ensuring mechanical simplicity to avoid unnecessary motorisation—reflected our commitment to enhancing the daily experience of users. While there were numerous technical and logistical hurdles, our interdisciplinary teamwork, healthy discussions, and rigorous prototyping processes allowed us to overcome each obstacle with practical solutions. This experience has deeply enriched our understanding of sustainable design, user empathy, and feasibility considerations. Looking ahead, we are excited about refining our design further, exploring sustainable materials, and driving community adoption to amplify our project's impact. This journey has truly been about realising the power of thoughtful, empathetic design to create lasting change." - — Hitanshi Waradkar, 4th-year bachelor's in industrial design student, MIT Institute of Design, Pune

CHAPTER 6: COMMENTARY ON IMPACT (BASED ON PRIMARY AND SECONDARY RESEARCH)

Drawing from both primary data (student interviews, partner feedback, and stakeholder testimonials) and secondary metrics (application numbers, project conversions, and prototype traction), this section offers an integrative view of how DI Movement's framework translates into tangible social outcomes.

Theme	Observations from Projects	Secondary Metrics	Analytical Interpretation
1. Fostering Inclusive, User-Centric Innovation	- **Inclusive Board Game:** Emphasised tactile and auditory design for visually impaired users, shaped by direct user interactions at a blind school.	- **User Engagement Surveys:** Gathered satisfaction and usability ratings from target users (e.g., visually impaired, underprivileged children). - **Iterative Feedback Loops:**	By rooting design in empathy and continuous iteration, students ensure that final solutions align with genuine user needs. This leads to deeper acceptance and easier adoption and

	- **School on Wheels:** Developed student-friendly bus interiors based on real-time feedback from children and NGO staff.	Documented weekly or monthly user responses to refine prototypes.	can significantly enhance the long-term relevance and impact of DI Movement prototypes.
2. Advancing Livelihoods & Socio-Economic Impact	- **Broom Maker Innovation:** Upcycling palm-leaf waste for added income streams. - **Low-Cost Biogas Digester:** Savings on LPG and waste-disposal fees, potentially augmenting household, or canteen finances.	- **Income Tracking:** Qualitative follow-ups to see whether new product lines or cost reductions actually boosted family or community income. - **Community Adoption Rate:** Measured how many families or local groups replicated the technique or solution.	Solutions that tap existing resources (e.g., leftover palm leaves, local waste) create tangible social and economic benefits – not just for student teams but for end-user communities. This synergy fosters a positive feedback loop, where demonstrable gains invite further participation.
3. Sustainability & Resource Efficiency	- **Decentralised Biogas Projects:** Reduced landfill	- **Waste Diverted from Landfill:** Estimates of organic or leaf waste	Resource-focused prototypes prove especially appealing to

	burden by converting organic waste into biogas. - **Leaf-Waste Upcycling:** Reduced environmental pollution by transforming burn-off waste into saleable goods.	recycled into new products or used in local energy generation. - **Carbon Footprint Indicators:** Approximate reduction in transportation or methane emissions from local, small-scale systems.	schools, NGOs, and local governments looking for greener, low-cost approaches. Anchoring economic viability and environmental stewardship together amplifies the replicability and policy alignment of DI Movement solutions.
4. Strengthening Academic-Industry Integration	- **Collaboration with NIFT:** Integrated "Design & Society" module linking coursework to real-world challenges. - **MIT Institute of Design:** Provided advanced technical input and design reviews, bridging	- **Curricular Adoption:** Number of institutions granting academic credits for DI Movement projects or embedding them into final-year "Graduation Projects." - **Faculty Masterclasses:** Participation rates and qualitative feedback from workshops that	Tying DI Movement projects to academic timelines and credit structures helps maintain momentum, ensuring prototypes are not abandoned after initial excitement. This also builds a pipeline where each cohort of students incrementally

	theoretical design and practical applications.	upskill professors in design thinking.	refines solutions and fosters a long-term design-thinking culture on campus.
5. Network & Ecosystem Building	- **City-Based Chapters:** Proposed expansions for "School on Wheels," connecting multiple colleges and NGOs in a single urban hub. - **Mentor Registries:** The pool of mentors grows as more prototypes show potential, attracting domain experts and industry leaders.	- **Partnership Inquiries:** Count of external requests from NGOs or academic institutions to replicate workshops or adopt DI Movement frameworks. - **Mentor Registry Growth:** Tracking how many alumni, experts, or industry professionals volunteer for new student cohorts each cycle.	By fostering local networks (city chapters, mentor pools), DI Movement extends beyond a single institution's success, creating a broader culture of innovation. This layered collaboration is a core reason that solutions can scale or cross-pollinate, benefiting multiple communities and topic areas.
6. Attracting Funding & Driving Entrepreneurship	- **Live Prototypes:** Fully functioning small-scale	- **Investment/Grant Secured:** Proportion of prototypes that receive seed funding	Entrepreneurial viability is key to sustaining prototypes past the

	models (e.g., biogas digesters, upcycled crafts) validated by real-world users, demonstrating market feasibility. - **NGO & Investor Interest:** Some solutions gained attention from potential seed funders or local incubators.	or transition to formal incubation post-DI Movement. - **Venture Longevity:** Assessment of how many student-led enterprises remain active 6–12 months after the official program ends.	academic year. Financial or incubator support ensures advanced refinement, manufacturing, and eventual market entry. DI Movement thus fills a crucial gap between early-stage ideation and the real-world demands of startup development.

Overall Insights

- **Empathy as a foundation**: Across all themes, user insights have proven essential to producing viable, socially relevant outcomes.
- **Institutional embedment**: Aligning project timelines with academic calendars and providing formal academic credit fosters continuity and quality control.
- **Scalable solutions**: Low-cost, locally adaptable designs (e.g., upcycling waste, modular ‘School on Wheels’) are primed for replication across communities.
- **Tangible socio-economic returns**: Documenting cost savings, income generation, and environmental gains persuades stakeholders and catalyses further interest from mentors, incubators, and funding bodies.

Through this holistic approach – merging thematic focus, secondary metrics, and analytical interpretation – DI Movement built the foundation for long-term, community-oriented design innovation.

"When we embarked on redesigning the 'School on Wheels,' we envisioned more than just a physical transformation—we aimed to create a joyful, engaging, and dignified educational experience for children who have limited or no access to formal schooling. Witnessing firsthand the challenges faced by underprivileged children in urban slums deeply motivated us to innovate a mobile learning environment that truly caters to their needs. Through guidance from the DI Movement, TinkerLabs, and our mentors at the MIT Institute of Design, we focused heavily on user research, directly engaging with children, teachers, and child psychologists. Observing how children naturally learn, interact, and socialise allowed us to design intuitive modular furniture, ergonomic seating arrangements, and interactive, adaptable spaces within the confines of a bus. Our diverse backgrounds and healthy team debates enriched our design process, ensuring our decisions were practical, inclusive, and scalable. This journey taught us invaluable lessons in empathy, real-world feasibility, and the transformative potential of thoughtful design. We firmly believe that our concept can significantly improve access to education, creating environments where children feel safe, inspired, and valued. Looking ahead, we are excited about piloting full-scale prototypes, enhancing accessibility for children with special needs, and fostering partnerships that could scale this concept nationwide. It's deeply rewarding to know our work could empower communities, nurture creativity, and bring meaningful education directly to children's doorsteps." - Karishma Kapoor, bachelor's in design student, MIT Institute of Design, Pune (on behalf of the team: Karishma Kapoor, Jigisha Joshi, Janvi Nirmal, and Shreya Ghodekar)

CHAPTER 7: RECOMMENDATIONS AND CONCLUSION

Recommendations:

1. **Post-program continuity**
   - It is recommended that a structured follow-up mechanism be established so that promising prototypes may be further refined and piloted. Opportunities could be offered for continued mentorship, access to maker spaces, or additional funding avenues.
2. **Enhanced academic alignment**
   - It is advised that the DI Movement's core milestones be mapped onto academic calendars to reduce scheduling overlaps. Coordination with faculty could be

strengthened so that students' academic requirements align more closely with project submissions and review timelines.

3. **Cross-sector partnerships**
   - It could be beneficial for government bodies and industry partners to be more deeply involved in program design and execution. Further synergy with local incubators, CSR teams, and policymakers may be sought to secure resources, align with public initiatives, and validate solutions at scale.
4. **Curriculum integration**
   - It is suggested that program elements be formally included in course syllabi to encourage sustained learning. Faculty members could be provided with 'train-the-trainer' sessions, enabling them to embed design thinking principles and entrepreneurship modules in their teaching.

5. **Robust impact tracking**
   - It is recommended that a standard set of key performance indicators be systematically tracked to assess long-term outcomes. Metrics such as prototypes adopted, funding secured, community feedback, and social impact benchmarks could be measured to guide iterative program enhancements.

By implementing these recommendations, the DI Movement's foundational success may be further strengthened, and a lasting culture of socially conscious innovation could be sustained across participating institutions.

"Integrating Titan's DI Movement into our curriculum at NIFT has significantly reshaped our approach to design education. With my longstanding commitment to ethical and socially responsible design, I saw immense potential when Titan and TinkerLabs introduced the DI Program. It was a natural alignment, reinforcing our vision of nurturing socially conscious designers who go beyond consumer-focused solutions to address genuine societal challenges. Through our structured 'Design and Society' module, students immersed themselves in empathy-driven research, tackling diverse issues aligned with the UN's Sustainable Development Goals—from adaptive printing tools for differently abled artisans to innovative methods of food preservation and fabric waste upcycling. Students emerged from this experience with not only heightened empathy and practical design skills but also a clearer understanding of

sustainability, inclusivity, and ethical responsibility. Despite academic timelines sometimes limiting project maturity, the enthusiasm and creativity sparked by this program were undeniable. This initiative has confirmed my belief in the transformative power of academia-industry collaboration to nurture design solutions that are truly impactful, sustainable, and socially responsible." — Dr. Preetha Bhattacharya Hussain, Chairperson – Foundation Program, National Institute of Fashion Technology (NIFT)

CHAPTER 8: CASE STUDIES

The program's multi-partner ecosystem ensures outreach to diverse colleges, offers robust design-thinking training, and establishes pathways for further business and technical guidance, which creates the next generation of socially minded entrepreneurs.

The DI Movement: Fostering Social Entrepreneurship Among Emerging Innovators

1. Introduction

Established as an offshoot of Titan's successful Design Impact Awards—which primarily target mature startups—DI Movement focuses on early-stage student innovators in colleges and universities across India, guiding them to design, refine, and potentially incubate socially impactful solutions.

This case study provides a comprehensive look at how this initiative evolved from a simple online repository of design resources to a fully-fledged incubator-mentorship platform that nurtures young social entrepreneurs. The information herein is derived from in-depth discussions with the Sattva Project Team:

- Ashmita Japsen (Senior Consultant, Project Lead)
- Venkat Sai (Consultant, Project Manager)
- Meghana Katam (Analyst, Project Coordinator)

Evolution of the Initiative

The Design Impact Movement (DI Movement) began as an online platform tailored specifically for students to enhance their understanding and application of design-

thinking principles. Initially, the platform served as a repository of curated knowledge, including design-thinking modules, expert-led masterclasses, and essential resources. It provided a mechanism for open submissions, allowing students to share their prototypes and receive constructive feedback from experts affiliated with Titan. Moreover, experiential workshops were facilitated in collaboration with partner organisations like Protovillage, immersing students deeply in human-centred design over several intensive days.

Outreach and Mobilisation

The outreach strategy of DI Movement operated through two distinct yet complementary approaches:

- TinkerLabs facilitated qualitative engagements, conducting human-centred design workshops where student teams actively identified local community problems and developed low-fidelity prototypes over extended periods. Their outreach efforts specifically targeted select design and engineering colleges where strong institutional relationships existed.
- Conversely, IKP Knowledge Park adopted an expansive outreach strategy, leveraging its extensive incubator network and partnerships with college entrepreneurship cells to attract a broader range of students. IKP organised roadshows and short webinars, inviting widespread participation, specifically encouraging technically proficient students with existing academic or personal projects to orient their work toward social impact.

In terms of inclusivity, both IKP and TinkerLabs consciously engaged tier 2 and tier 3 institutions, acknowledging the lack of resources typically available for design innovation in these regions. This strategy fostered geographical inclusivity, ensuring representation and ideas from lesser-known colleges.

Selection Criteria and Process

The selection process for projects within DI Movement emphasised several key criteria:

- Projects were required to clearly address significant societal needs in the Indian context, spanning areas such as healthcare, environmental sustainability, and rural development. Innovative and unique solutions surpassing current market offerings

were prioritised. Crucially, applicants needed to demonstrate feasibility, sustainability, and the capacity for scalability in their prototypes. Furthermore, applicants were evaluated on their entrepreneurial mindset, resilience, and clarity of vision.

- The evaluation involved multiple rounds, beginning with initial screenings to eliminate incomplete or overly AI-generated submissions, followed by a shortlisting stage that assessed practical prototype aspects, sustainability, and alignment with social objectives. A final jury comprising experts from Titan, Sattva, TinkerLabs, and IKP conducted the concluding evaluation, approving approximately 5-10% of submitted projects for incubation.

Incubation and Mentorship

- DI Movement aimed to incubate over 50 finalists through structured, multi-month support initiatives. Early-stage immersive workshops provided participants with foundational experiences in human-centred design, leadership, and problem-solving. IKP initially contributed through group mentoring, introducing students to critical concepts like government policies, intellectual property rights, and fundraising strategies. Currently, DI Movement is transitioning toward securing a new incubation partner to offer deeper, personalised mentorship.
- Mentorship networks drew extensively from subject-matter experts within IKP and faculty from TinkerLabs, supplemented by regular check-ins to monitor prototype progression, technical challenges, and business model development. Furthermore, Sattva and Titan actively built relationships to develop future angel investment and seed funding opportunities, connecting promising student ventures with long-term capital.

Governance and Monitoring

- Governance of the DI Movement involved structured weekly meetings facilitated by Sattva with partners Titan, TinkerLabs, and IKP, ensuring transparency and accountability. These meetings addressed critical operational metrics, including outreach effectiveness, application status, project updates, student engagement, and milestone achievements.

- Additionally, the program employed a comprehensive evaluation framework incorporating quantitative metrics—participant numbers, prototype submissions, shortlists—and qualitative assessments—prototype depth, student commitment, and market research clarity. Special attention was given to managing student attrition and balancing their academic obligations effectively.

Challenges and Key Learnings

- Several challenges informed continuous improvements in DI Movement's operations. Balancing academic demands with entrepreneurial activities presented difficulties, mitigated by embedding workshops within college curricula. Student attrition due to initial enthusiasm waning over time was counteracted through rigorous upfront selection and clarifying commitments through interactive sessions.
- Brand visibility emerged as another challenge, prompting DI Movement to establish city-based chapters for broader ecosystem impact rather than single-college initiatives. Furthermore, prototype scalability and sustainability became focus areas, addressed by involving mentors specialised in product design, supply chain management, and impact investing. The initiative's flexible, adaptive approach allowed iterative improvements, refining timelines, partner roles, and workshop structures for enhanced effectiveness.

Outcomes and Future Directions

The DI Movement recorded significant outcomes, receiving over 3,000 applications in a single cycle, resulting in approximately 50-60 high-potential innovations. Notably, strong participation from tier 2 and tier 3 colleges affirmed the initiative's commitment to geographical inclusivity, with remarkable innovations emerging in fields like healthcare, agriculture, environmental sustainability, and community development.

Looking ahead, DI Movement intends to strengthen incubation support by securing a new partner capable of delivering personalised mentorship, advanced product development, and investor matching. Additional future strategies include establishing city-wise chapters to foster local ecosystems for social entrepreneurship, pursuing policy-level partnerships to amplify governmental support, and potentially integrating DI Movement workshops into academic curricula to enhance student participation and depth of learning.

Case Study: Designing an Inclusive Board Game for Visually Impaired Users

1. Introduction

This case study captures the journey of three undergraduate students—Charvi, Shanu, and Sneha—who came together to design a unique, inclusive board game tailored to the needs of visually impaired (VI) individuals. Charvi is a 3rd-year bachelor's student specialising in design at the Indian Institute of Information Technology, Design, & Manufacturing, Jabalpur. Inspired by her own personal experiences and guided by their collective empathy, the team took on the challenge of bridging the gap between recreational gaming and accessibility for people with visual impairments.

Their project was developed under the umbrella of the Design Impact Movement, with additional mentorship from TinkerLabs. The students' motivation was fuelled by a desire to create a sustainable, affordable, and engaging gaming solution that fosters inclusivity for all.

2. Project Overview

- Team Members: Charvi, Shanu, and Sneha
- Institution: Indian Institute of Information Technology, Design, and Manufacturing, Jabalpur
- Course: Bachelor in Designing (3rd year)
- Project Focus: An inclusive board game that accommodates the needs of visually impaired users without alienating sighted players.

Key Goals:

1. Accessibility – Create a board game that is inclusive and easy to use for both visually impaired and sighted players.
2. Affordability – Ensure the product is cost-effective and caters to different socio-economic backgrounds.
3. Portability – Design a lightweight, compact product suitable for small homes and minimal storage.

4. Scalability – Develop a solution that can be replicated or adapted for larger audiences or different contexts.

3. Inspiration and Motivation

- Personal Connection: Charvi drew inspiration from her brother's experiences with visual impairment. Observing his struggles with daily tasks and entertainment options heightened her empathy and propelled her to find a creative solution.
- Field Research: The team visited a blind school to interview students, teachers, and administrators. Their conversations revealed a lack of inclusive board games and helped the team identify the most important design requirements.
- TinkerLabs Challenge: The students learned about the Design Impact Movement and the associated challenge through TinkerLabs. The orientation sessions offered key insights into the design-thinking approach, motivating them to craft a rigorous, user-centric project.

4. Identifying the Problem

Although some board games for VI individuals do exist, the team noted that most solutions simply remove colour and add tactile components to standard board games without fully integrating the VI user experience. The students discovered gaps such as:

1. Limited Tactile Integration: Existing games often did not fully leverage tactile and auditory feedback.
2. High Cost or Niche Availability: Many adaptive games were either expensive or unavailable in common markets.
3. Unengaging or Overly Simplified: Games that existed tended to be less challenging for adult or older VI users, failing to deliver the same thrill that sighted players experience.

Based on these observations, the team envisioned a maze-inspired board game where VI users rely on tactile and auditory cues to navigate while sighted players also experience the game on an equal footing.

5. Design Process and Methodology

The team followed an iterative “Double Diamond” design-thinking framework:

1. Discover (Empathise)
   - Spent time at a blind school to understand user needs and preferences.
   - Conducted interviews with VI students, families, and teachers.
   - Documented the learning through journey mapping, As-Is mapping, and clustering insights.
2. Define
   - Narrowed down the problem to “creating a portable, inclusive board game”.
   - Identified core requirements: tactile feedback, auditory signals, minimal reliance on colour, affordability, and portability.
   - Reaffirmed the target end-users: VI individuals and their friends/family.
3. Develop (Ideate)
   - Brainstormed various game mechanics—both digital and analogue.
   - Adopted elements from traditional Indian board games (such as Ludo, Chess, and Maze puzzles).
   - Generated multiple prototypes, focusing on balancing magnet placements, board layout, and the tactility of the game pieces.
4. Deliver (Prototype and Test)
   - Created a prototype board game with a magnetic mechanism so that pieces wouldn’t easily dislodge.
   - Conducted user testing in multiple rounds:
     - VI students at the school.
     - PhD students for technical and conceptual feedback.
     - The team’s own circle (sighted peers and family).

- Documented feedback and iterated weekly for about two weeks, refining the size, height, and shape of the game board for maximum comfort and portability.

6. Key Features and Innovations

1. Tactile Maze Board

- Raised Pathways: The “maze” aspect is physically delineated, allowing VI users to feel boundaries and paths.
- Underside Navigation: The game can be navigated from below, placing VI and sighted players on an equal level of challenge.

2. Magnetic Components

- Sturdy Pawn Placement: This prevents game pieces from getting lost or dislodged easily.
- Tactile Feedback: Magnets provide tactile cues when pieces move to the next cell.

3. Minimal Visual Reliance

- Reduced Dependence on Colour: Transitions from colour-based to texture-based indicators.
- Auditory Feedback: Consider the addition of small sound cues (dice rolls or other ways to confirm movement).

4. Inclusive Design Philosophy

- Equal Challenge: The board is intentionally designed so that visually impaired and sighted individuals face the same level of complexity.
- Portability and Affordability: The game aims to be light, compact, and made from cost-effective materials to cater to lower socio-economic backgrounds.

7. User-Centric Testing and Feedback Integration

- Surveys, Interviews, and Observations: The team regularly interacted with the target users, documenting preferences, difficulties, and suggestions.

- Iterative Prototyping: After each feedback session, the team made immediate changes—adjusting board dimensions, piece shapes, and texture or magnet strength.
- Empowering Experience: In one test session, a VI student defeated Charvi in the game—an outcome that perfectly showcased the product's inclusive nature.

Example of Feedback Implementation

- Challenge: Difficulty counting moves from the top of the board.
- Solution: Shift focus to counting from the bottom or underside, clarifying instructions, and adjusting path geometry.

8. Technical and Functional Feasibility

- Physical Dimensions: The team encountered engineering constraints in terms of board thickness, magnet strength, and accessibility for various age groups.
- Table Height: Users bending under the table is a concern; future iterations aim to refine height adjustments or design solutions that eliminate awkward positioning.
- Material Choices:
  - Wood: Lightweight yet sturdy enough to sustain repeated use.
  - Limited Use of Plastics/Metal: Prioritising sustainability, the team sought eco-friendly alternatives.

9. Sustainability and Ethical Considerations

1. Resource Efficiency
   - Minimised components (simple board, pawns, and dice).
   - Explored the use of local, sustainably sourced wood.
2. Environmental Impact
   - Avoided heavy reliance on plastics or metals that might break or become environmental hazards.
   - Opted for low-energy manufacturing processes.

3. Ethical Integration
    - Ensured that the end-users' needs and dignity remained central to all design decisions.
    - Strived for an inclusive approach that does not tokenise or patronise VI individuals.

10. Impact and Scalability

- Social Impact:
    - Fosters community interaction between VI and sighted individuals.
    - Encourages VI players to use and hone navigational skills in a safe, entertaining setting.
- Scalability:
    - The design can be adapted to larger boards, different games, or additional modules.
    - Potential partnerships with NGOs, schools, and government bodies to distribute the product widely.
- Long-Term Sustainability:
    - Focus on building cognitive skills among VI users.
    - Potential for expansions or variations of the maze design to keep the gameplay fresh and challenging.

11. Teamwork and Collaboration

- Collaboration: The trio (Charvi, Shanu, and Sneha) are roommates, which facilitates constant communication and swift decision-making.
- Mentorship: Guidance from TinkerLabs provided external validation and insights, particularly regarding user research and the design-thinking process.
- Conflict Resolution: Team members openly critiqued and discussed divergent ideas. Empathy for the end-user kept the group aligned on the project’s vision and goals.

12. Challenges and Lessons Learned

1. Time Management: The two-week intensive iteration period tested the team's project management and decision-making skills.
2. User Testing with Limited Access: Scheduling visits to the blind school and securing consistent user feedback required persistence and adaptability.
3. Physical Constraints: Balancing board dimension, weight, and magnet alignment were trickier than expected.
4. Market Readiness: While the team envisions broad distribution, the exact cost, final materials, and manufacturing logistics require further refinement.

Despite these hurdles, the team remained motivated, learning that empathy, open communication, and frequent prototyping are cornerstones of meaningful product design.

13. Presentation and Communication

- Prototypes and Visuals: The team developed a working prototype and recorded a demonstration video showing how users—both VI and sighted—can engage with the game.
- Documentation: From brainstorming notes to final testing results, the team maintained thorough records of their process. They used mind maps, journey mapping, and quick clustering methods to organise their ideas and solutions.

14. Future Directions

- Further Iterations and Testing: Incorporate user feedback to refine board design, ensuring comfort for various age groups and physical settings.
- Potential for Digital Hybrid: Explore integrated digital elements (e.g., a smartphone app for auditory cues or scoreboard) to expand accessibility and interactivity.
- Extended Audience: Adapt the maze game mechanics for other communities or incorporate additional puzzle modules to keep the experience fresh for returning players.

15. Conclusion

Charvi, Shanu, and Sneha's inclusive board game exemplify the power of user-centric design, empathy-driven innovation, and hands-on prototyping. By focusing on accessibility, affordability, and scalability, the team has paved the way for a more inclusive gaming landscape. Their journey underscores the vital importance of deep user research, iterative design methods, and collaborative teamwork.

As they await further incubation support from the Design Impact Movement, the team remains optimistic about refining and scaling their board game for broader social impact. Their story not only highlights the value of inclusive design but also serves as inspiration for future innovators seeking to merge creativity, empathy, and technical feasibility into life-changing products.

Case Study: Designing a Decentralised Biogas Digester for Urban Waste Management

1. Introduction

Student: Hitanshi Waradkar, Suvrat Golchha

Institution: MIT Institute of Design, Pune

Course: Bachelor’s in industrial design (4th and Final Year)

Project Domain: Biogas Digesters for Decentralised Waste Management

Working alongside her teammate Suvrat, Hitanshi embarked on a live project with Chakrakar Lifestyle Solutions, a company creating biogas systems for both commercial and home-based applications. Their design exploration centred on improving and "humanising" existing biogas digesters while keeping solutions affordable, efficient, and scalable.

2. Project Overview

- Focus: Redesigning a 4 ft. x 4 ft. biogas digester system to manage organic waste in decentralised, urban contexts (e.g., hostels, commercial kitchens, residential complexes).
- Key Objectives:

1. Enhance User Experience: Humanise the system to encourage a feeling of ownership and daily care.
2. Improve Safety and Dignity: Streamline interactions for *Safai Karam Charis* and operators, reducing direct contact with waste.
3. Affordability and Feasibility: Maintain low manufacturing costs and straightforward maintenance.
4. Scalability and Sustainability: Offer a replicable model to manage waste responsibly, reduce landfill dependency, and promote a circular economy.

3. Inspiration and Motivation

1. Personal and Academic Insight
   - Hitanshi frequently observed the large volume of food waste generated in her hostel's mess. This tangible, everyday experience formed the initial motivation for developing an impactful solution.
   - As a design student, she aspired to apply classroom learning to a real-world challenge, tying her academic pursuits with genuine social and environmental needs.
2. Design Impact Movement
   - Hitanshi first encountered TinkerLabs (the organising body behind the Design Impact Movement) during her second year. In this iteration, the movement offered support, networking opportunities, and a structured design-thinking process to bring socially conscious projects to market.
   - The motivation: "To actually see the product out there in the market and get the necessary help for it."
3. Company Collaboration
   - Chakrakar Lifestyle Solutions provided technical constraints, user connections, and real-world manufacturing considerations.
   - The synergy between academic design knowledge and the company's engineering background enriched the project's feasibility and user-centric focus.

4. Identifying the Problem

Biogas is not a new technology. However, most biogas systems are large-scale and centralised, rarely suited for decentralised, urban settings where smaller daily volumes of waste are produced. Key gaps included:

1. Urban Suitability
   - Most existing biogas plants cater to massive institutional or industrial scales, leaving a void in mid-sized or domestic-level solutions.
2. User Experience
   - Operators and *Safai Karam Charis* experience stigma and poor working conditions when dealing with waste.
   - The design rarely addresses comfort, dignity, or daily interactions.
3. Mechanisation vs. Motorisation
   - Current systems often require external energy or large infrastructure; a simpler, fully mechanical solution could reduce costs, reliance on electricity, and complexity.
4. Cost and Cultural Mindset
   - The upfront expense of new technology can deter households and smaller institutions.
   - There is also psychological resistance to cooking with “waste-derived” fuel, reinforcing the need for educational and emotional design elements.

5. Design Process and Methodology

Although not strictly labelled by stages, the team’s process aligns with design-thinking principles:

1. Empathise
   - Field Visits and Observations: Interviewed *Safai Karam Charis*, canteen operators, and domestic users in Pune (e.g., Ferguson College canteen, GST Bhavan, government institutions, private homes).

- Informal Interactions: Observed public waste collection in the city, gathering real-time input from waste collectors.
- Secondary Research: Explored existing literature, online resources, and policies on manual scavenging, decentralised waste management, and home-scale biogas systems.

2. Define

- Identified actionable problem statements by weaving together user pain points (splashback, odour, heavy lids) and technical feasibility (pressure regulations, system size).
- Focused on humanising the digester to promote daily care, ownership, and acceptance.

3. Ideate

- SCAMPER Method (Substitute, Combine, Adapt, Modify, put to another use, Eliminate, Reuse) to brainstorm solutions for:
  - Feeding Hole design (prevent splashing, easy opening/closing).
  - Structural Form (transition from boxy shape to dome form for better pressure handling and aesthetic appeal).
  - User Interaction (creating a friendly, almost “companion-like” system identity).
- Cross-Domain Inspiration: Analysed dustbins, water tanks, and pumping systems to adopt relevant best practices.

4. Prototype and Test

- Scale Model Testing: Full-scale prototyping (4 ft. x 4 ft.) was impractical; instead, cardboard mock-ups and partial PVC prototypes were used to simulate functional aspects (waste feeding, splashback angles, and user posture).
- Expert Consultation: Continuous feedback loops with the company's founder (engineer) refined mechanical principles, ensuring no motorisation was needed and that pressure differentials would suffice for gas flow.

- Iterative Refinement: Small changes, such as adding an incline for service holes, aligning feed holes to user posture, and verifying that water-sealed compartments limit odour escape.

5. Documentation

- Photographs, sketches, flowcharts, and sticky note boards recorded each insight.
- A comprehensive presentation and mini portfolio highlight the user research, sketches, prototypes, and design evolution.

6. Key Features and Innovations

1. Human-Centred Interactions

- Encourages operators to see the digester as part of the “daily routine,” fostering higher ownership and improved maintenance.
- Lid and feeding mechanisms accommodate comfortable posture, reducing contact with waste and splashing.

2. Mechanical System

- Relies on air pressure differentials rather than motorised parts, reducing operational costs, complexity, and potential breakdowns.
- Portable enough for commercial kitchens, college messes, and mid-size communities.

3. Aesthetic Dome-Shaped Design

- Replaces the typical “black box” with a more visually appealing form that can still absorb heat.
- Enhances pressure distribution internally while promoting a friendlier exterior appearance.

4. Material Efficiency

- Currently uses LLDP (a polymer plastic) for production; however, future iterations aim to incorporate more sustainable materials (e.g., metal) to reduce environmental impact.

5. Cost-Effectiveness

- Minimal reliance on additional power; the system pays for itself over time by offsetting LPG bills.
- Encourages decentralised waste disposal, preventing expenses tied to external waste collection and large-scale treatments.

7. User-Centric Approach

1. Diverse Stakeholders

- Kitchen staff in canteens, *Safai Karam Charis* handling daily waste, homeowners adopting the system, and engineers at the company for technical input.
- Each stakeholder's feedback shaped the design, from the waste-loading height to the shape and positioning of the lids.

2. Empowering Safai Karam Charis

- Less direct contact with waste, improved dignity in handling tasks, and straightforward cleaning processes.
- Many welcomed the chance to share day-to-day challenges and see them addressed in real design modifications.

3. Testing and Feedback

- Observations at operational sites helped the team identify practical and cultural barriers—such as smell, fear of waste, or the perception that the system is “high-tech”.
- Iterative improvements included adding slight inclines, rethinking stove performance, and re-checking inlet/outlet placements.

4. Inclusivity and Accessibility

- Though not specifically designed for neurodiverse or physically challenged users, the simplified mechanical interface, one-handed operations, and straightforward design partially accommodate varied needs.
- Future research could delve deeper into specialised user groups (e.g., the physically impaired).

8. Technical and Functional Feasibility

1. Engineering Foundation

- Air Pressure: Methane flows from a region of high pressure to a region of low pressure, eliminating the need for motorised pumps.
- Material: LLDP for the main body, with possibilities for more sustainable materials in the future.

2. Validation

- Frequent discussions with company engineers to align on feasible manufacturing methods and mechanical design.
- Leveraged existing prototypes (PVC pipes, partial mock-ups) to simulate user interactions and fluid dynamics.

3. Areas for Future Improvement

- Stove Modifications: Biogas burns differently from LPG. Fine-tuning the stove could improve cooking times, flame height, and user experience.
- Odour Mitigation: Psychological acceptance remains a barrier; further design or educational strategies can address the perceived "waste" smell.
- Standardisation vs Customisation: Striking a balance for housing societies or varied building layouts remains a design challenge.

9. Sustainability and Ethical Considerations

1. Circular Economy

- On-site waste management completes the loop: "You produce, you consume what you produce", minimising landfill contributions.
- Reduces LPG usage and greenhouse gas emissions, aligning with environmental stewardship.

2. Resource Efficiency

- Low operational costs, minimal energy usage, and an aim toward more eco-friendly materials.

- Less plastic consumption or leftover scrap if dome forms are manufactured smartly.

3. Ethical Design

- Addresses the stigma and drudgery often associated with manual waste management.
- Strives to bring dignity and safety to crucial yet underappreciated roles in society.

10. Impact and Scalability

1. Social Impact
   - Empowers local waste handlers by simplifying and sanitising their daily interactions.
   - Encourages communities to take responsibility for their waste, prompting behaviour change and awareness.
2. Economic Benefits
   - Cost recovery via reduced LPG bills.
   - Potential for mass production if widely adopted, driving down manufacturing costs.
3. Scalability
   - Easily adapted for mid-sized commercial kitchens, college hostels, and eventually domestic users.
   - Standardisation (versus hyper-customisation) is key to broader market adoption.

11. Teamwork and Collaboration

1. Interdisciplinary Input

- *Hitanshi* (focused on user research and system design) and *Subrat* (hands-on engineering) pooled skills to tackle both design and feasibility.
- Faculty mentors and patent and registration teams at the MIT Institute of Design offered additional expertise and evaluations.

2. Conflict Resolution

- “A lot of healthy arguments” helped refine design decisions, ensuring each change genuinely improved user experience.
- Shared motivation for an impactful outcome kept the team united despite academic workloads.

3. Peer Engagement

- Classmates and external experts contributed fresh perspectives.
- Collaboration was fuelled by the desire to transform a “good idea” into a “market-ready solution”.

12. Presentation and Communication

1. Documentation and Visuals

- A well-structured portfolio and presentation detailing sketches, flowcharts, 2D/3D mock-ups, and user feedback.
- Photographs, insight tables, and final form explorations showcased the iterative journey.

2. Prototyping

- Scale models (cardboard, PVC pipes) tested user interactions; a full-sized working prototype was logistically challenging but remains a future step.
- Each small test provided actionable insights to refine ergonomics and mechanical details.

3. Narrative

- Clear storytelling from problem definition to final conceptual design.
- Emphasis on circular economy, practical feasibility, and empathy-driven innovation resonates with stakeholders and the audience's interests.

13. Conclusion and Next Steps

Hitanshi and Suvrat’s project exemplifies how simple yet carefully designed innovations can catalyse major shifts in waste management habits and perceptions.

By leveraging user research, mechanical insights, and creative prototyping, the team crafted a domestic-to-mid-scale biogas digester that addresses environmental concerns, user dignity, and cost efficiency.

Key Takeaways

- Humanising Technology: By framing the digester as part of a user's daily routine, acceptance and maintenance become natural.
- Decentralised Sustainability: Managing waste where it is produced reduces landfill load and fosters environmental responsibility.
- Incremental, Real-World Impact: Small design changes—like adjusting feed-hole angles or rethinking stove functionality—can make sustainability more approachable and impactful.

Future Outlook

- Refinement and Trials: Further field testing to perfect stove performance, odour control, and aesthetic design.
- Community Adoption: Collaboration with housing societies and government bodies to expand decentralised biogas adoption.
- Material Innovation: Transitioning to metal or more eco-friendly materials to advance genuine sustainability.
- Integration Into Curriculum: Encouraging institutions to embed real-life social-impact projects into academic structures, enabling more students to develop feasible, empathic solutions.

In sum, this project stands as a compelling example of merging industrial design expertise with real-world constraints to provide a feasible, user-friendly biogas solution that enhances social dignity, promotes environmental consciousness, and underscores the transformative power of design thinking.

Case Study: Redesigning “School on Wheels” for Inclusive and Engaging Learning

1. Introduction

Team Members:

- Karishma Kapoor
- Jigisha Joshi
- Janvi Nirmal
- Shreya Ghodekar

These four students collaborated to redesign a *School on Wheels* concept in partnership with an NGO called Doorstep Schooling. Their goal is to transform an ordinary bus into a mobile learning environment catering to underprivileged children in urban slums, migrant communities, and low-income neighbourhoods.

They are all students at the MIT Institute of Design, Pune, where they worked under faculty mentorship and guidance from TinkerLabs (organisers of the Titan Design Impact Movement).

2. Project Overview

- Focus: Redesigning the interior and exterior of a bus to enhance the educational experience for children who have limited access to formal schooling.
- Key Objectives:

1. Modular, Stackable Furniture: Easy to store, ergonomic, fun, and adaptable to multiple age groups.
2. Space Optimisation: Address layout challenges within a tight bus interior, accommodating teaching materials, seating, and even a small lavatory.
3. Engaging and Inclusive Environment: Encourage peer learning, circle-based seating, and playful exploration.
4. Scalability and Sustainability: Leverage second-hand buses, minimal resources, and easily replicable design features.

3. Inspiration and Context

1. Underprivileged Children's Education

- The team noticed that many children of daily wage earners, construction workers, and migrant families are unable to attend formal schools due to financial constraints, mobility issues, and lack of awareness.
- Doorstep Schooling brings education directly to these neighbourhoods but faces challenges with limited bus space, lack of sanitary facilities, and inadequate furniture.

2. Maker's Bus and Other References

- Inspired by various "on-wheels" concepts, such as the Maker's Bus in Pune (teaching hands-on vocational skills), the team saw potential in reimagining bus interiors for broad educational purposes.

3. Hands-On Research

- The team visited municipal schools, other NGOs (e.g., Wings of Dream, Bal Bhavan), and child psychologists to understand the psychological, social, and ergonomic needs of young learners.

4. Identifying the Problem

1. Limited and Disorganised Space
   - Doorstep Schooling's existing "School on Wheels" had cramped seating, little to no storage, and no clear spatial segregation by age or learning level.
2. Lack of Sanitary Facilities
   - Teachers and children had to rely on public toilets, creating inconvenience and hygiene issues.
3. Inefficient Furniture and Layout
   - Children either sat on the floor or used improvised means, causing discomfort and poor posture.
   - The bus's interior design did not encourage interactive or peer-to-peer learning.

4. Occasional Lack of Exposure
    - Children seldom leave their immediate environment, missing educational trips to libraries, museums, or interactive learning spots around the city.

5. Design Process and Methodology

1. Empathise
    - Field Visits: Accompanied the Doorstep Schooling bus to multiple slum areas to observe daily operations.
    - Role-Play and Workshops: Conducted art and painting sessions with underprivileged kids (e.g., at Wings of Dream) to observe natural seating preferences.
    - Expert Consultations:
        - Spoke to child psychologists at Bal Bhavan about cognitive and social development.
        - Met with architects and designers who specialise in modular spaces.
2. Define
    - Created a clear design brief informed by TinkerLabs' framework, identifying:
        - Key Stakeholders: Children, teachers, NGO staff, and parents.
        - Constraints: Budget, bus dimensions, reusability of second-hand buses.
        - Must-Haves (e.g., ergonomic desks, secure storage, toilet) vs. Nice-to-Haves (e.g., integrative games on surfaces).
3. Ideate
    - Brainstorming Tools:
        - SCAMPER (Substitute, Combine, Adapt, Modify, put to another use, Eliminate, Reuse).
        - 50-10-5 Idea Mapping Techniques.
    - Floor-Plan Mock-ups: Used tape on the floor to map the bus dimensions and explore the placement of a toilet, fold-out awnings, and storage zones.

4. Prototype and Test
   - Foam Board Models: Created small-scale prototypes of the bus layout and furniture.
   - Stackable Furniture: Verified how many desk-stool units could fit without compromising movement.
   - Ergonomic Validation: Applied basic anthropometric guidelines (e.g., RULA-Bar or seat-to-desk height checks) for posture alignment.
5. Document
   - Throughout each stage, the team photographed sketches, mock-ups, and stakeholder interviews, compiling them into detailed presentations.

6. Key Features and Innovations

1. Modular Desk-Stool
   - Stackable, Single-Piece Design: Simplifies storage; no hinges or folding mechanisms reduce breakage and injury risk.
   - Versatile Usage: Functions as both a writing desk and stool; kids naturally discover new ways to sit or arrange themselves in circles.
   - Ergonomic and Age-Friendly: Comes in two heights, accommodating children aged 6 to 14; posture-friendly angles reduce slouching.
   - Recyclable Materials: Proposed to use roto-moulded plastic or recycled plastic, ensuring longevity and simplified end-of-life disposal.
2. Bus Layout with Toilet
   - Built-In Washroom: Alleviates hygiene and safety concerns for travelling teachers and children.
   - Smart Storage: Acrylic panels on cabinet doors let users identify contents easily.
   - Multi-Zone Space: Segregates age groups or learning levels; includes flexible floorspace for circle gatherings.
3. Interactive Details

- Magnetic or Tactile Walls: Utilise the metal bus body for low-cost puzzle games or interactive learning materials.
- Awning and Outdoor Expansion: Extend classroom space onto the sidewalk, which is vital for larger activities or for physically disabled children who find bus steps challenging.

4. Human-Centric Ethos

- Encourages peer learning: Circular seating for group tasks and cooperative play.
- Focus on children's natural tendencies: Observed how they sit, move, and collaborate.

7. User-Centric Approach

1. Diverse Stakeholder Input
   - NGO Staff and Teachers: Provided insights on storage, time constraints, and daily travel routes.
   - Children: Through role-play sessions and painting workshops, the design team observed how kids socialise and interact with space.
   - Mentors and Child Psychologists: Validated the child-friendly environment, highlighting cognitive and social development milestones.
2. Inclusivity and Accessibility
   - While not fully addressing special needs (e.g., physically impaired, visually challenged), the proposed design can be adapted with ramps or modified seating.
   - The team introduced an outdoor learning zone via awnings to circumvent bus-step obstacles.
3. Positive, Empowering Experience
   - Children see a bright, playful environment, breaking the monotony of formal classroom rows.
   - Teachers have dedicated storage and a private toilet, improving comfort and retention.

8. Technical and Functional Feasibility

1. Engineering Principles
   - Bus Safety Regulations: Correct angles for stairs, mandatory fire extinguishers, and proper ventilation.
   - Roto-Moulding Constraints: Ensuring desk-stool shape supports child weight without cracking or warping.
2. Validation and Mentorship
   - Transportation Design Faculty: Provided guidance on feasible bus modifications.
   - Initial Prototypes: Small-scale foam models tested for ergonomics, stackability, and space management.
3. Challenges
   - Manufacturing Costs: Sourcing robust recycled plastic or integrating biodigesters for the toilet must fit tight NGO budgets.
   - Road and Space Limitations: Narrow slum lanes and potential infrastructural barriers for the bus route.

9. Sustainability and Ethical Considerations

1. Reusing Second-Hand Buses
   - Transforms retired or discarded vehicles, preventing waste and reducing new manufacturing footprints.
2. Low Environmental Impact
   - Single-Material Furniture: Simplifies recycling at end-of-life.
   - Reduced Infrastructure Needs: Mobile classrooms obviate expensive, permanent construction.
3. Ethical Design
   - Addresses social inequities by bringing education to underserved communities.
   - Intentionally fosters dignity and hygiene for both students and teachers.

10. Impact and Scalability

1. Social Impact
   - Potential to increase literacy rates among slum or migrant children who lack transport or the means to attend formal schools.
   - Encourages hands-on, interactive learning that may boost retention and enjoyment.
2. Economic Benefits
   - Minimises infrastructure costs by using existing buses.
   - Scalable across multiple locations, especially for NGOs or government agencies adopting mobile learning.
3. Broader Adaptation
   - The concept can be tweaked for rural villages, Adivasi communities, or even well-resourced institutions looking for more collaborative classroom furniture.

11. Teamwork and Collaboration

1. Shared Responsibilities
   - Research and Ideation: Conducted collectively to ensure every member's insight shaped the core design.
   - Execution and Documentation: Split tasks according to individual strengths (e.g., 3D modelling, rendering, PPT creation, presenting to juries).
2. Conflict Resolution
   - Healthy debates led to well-rounded decisions.
   - Mentors, professors, and peer reviews offered neutral perspectives, mitigating design disagreements.
3. Interdisciplinary Approach
   - Consultations with Transportation Design and Industrial Design faculty.
   - Cross-sector partnerships with child psychologists and social workers enriched the solution.

12. Presentation and Communication

1. Visual Storytelling
   - Renderings and Scale Models: Illustrated bus interior transformations and desk-stool usage scenarios.
   - Detailed Presentations: Documented each iteration step with rationale, sketches, and feedback logs.
2. Prototype Demonstrations
   - Foam Board versions of furniture for ergonomic testing.
   - Small-scale bus Layout to validate the position of storage units, toilets, and group seating.
3. Feedback Integration
   - Incorporated stakeholder feedback from multiple NGOs, verifying practicality and cost feasibility.
   - A continuous improvement loop ensures the design remains user-centric and contextually relevant.

13. Conclusion and Next Steps

This "School on Wheels" redesign champions child-friendly spaces, modular furniture, and holistic learning experiences in a mobile setting. By synthesising user feedback, technical mentorship, and creative prototyping, the team has laid a foundation for a scalable, sustainable, and dignified educational environment on wheels.

Key Takeaways

- Mobility for Underserved Communities: A travelling classroom overcomes geographic and socio-economic barriers.
- Ergonomic and Engaging Furniture: Circle-friendly desks, easy storage, and robust materials foster interactive learning.
- Holistic Vision: Incorporates hygiene (toilet), adaptable layouts, and diverse learning approaches (indoor and outdoor).

Recommendations & Future Outlook

1. Pilot Testing

- Construct full-scale plastic prototypes of the desk stools for real-world feedback from children and teachers.
- Evaluate assembly, stacking, and durability under frequent bus travel conditions.

2. Accessibility Enhancements

- Explore ramps or detachable modules for children with physical impairments.
- Integrate Braille labelling, tactile surfaces, or auditory aids for visually or hearing-impaired learners.

3. Refined Manufacturing

- Collaborate with industry partners to adopt recycled plastics or cost-effective roto-moulding techniques.
- Ensure easy repair, longer product life, and lower overall carbon footprint.

4. Digital Tracking and Curriculum

- Integrate simple online or mobile-based registration for students, bridging documentation gaps.
- Develop or adopt existing modular curricula that support multi-age, multi-level learning in a single-bus environment.

5. Stronger Implementation Support

- Design Impact Movement or TinkerLabs can provide clearer communication channels, faster responses, and more thorough pilot facilitation.
- Scaling across other NGOs or government-run programs could amplify social and educational impact nationwide.

By bringing the school closer to children who need it the most, this redesign ensures that underprivileged communities receive not just basic literacy but also a playful, creative, and dignified learning experience—ultimately transforming how mobile education can shape lives and uplift entire neighbourhoods.

Case Study: Empowering Traditional Broom Makers Through Material Innovation

1. Introduction

Team Members:

- Astha Kothadiya (Hometown: Baramati, near Pune)
- Prasenjit Sutar (Hometown: Kolhapur, near Pune)
- Shriya Kulkarni (Hometown: Jalgaon, based in Pune)
- Abhay Krishna Madhavan (Hometown: Bengaluru/Kerala; interest in CAD and creativity)

All four are final-year Product Design students at the MIT Institute of Pune, sharing a common drive to address pressing social problems through hands-on innovation and design thinking.

2. Project Overview

Focus

- To assist a traditional broom-maker family near the college by improving their livelihood and reducing wastage in the broom-making process.

Key Objectives

1. Optimise Existing Processes: Enhance ergonomics and efficiency in broom production without requiring large capital investments.
2. Utilise Byproduct: Explore creative ways to repurpose the *waste palm leaves* (the “byproduct”) to open up new streams of income.
3. Sustainable and Accessible Approach: Ensure any intervention remains affordable, simple to adopt, and environmentally friendly.

Initial Insight

- Traditional broom-making is a dying occupation due to low market demand and emerging alternatives (e.g., plastic brooms).
- The broom-maker family struggled financially and considered leaving the profession altogether.

- Large amounts of dry palm leaves (byproducts) were being burned, causing both waste and environmental harm.

3. Inspiration and Motivation

1. Faculty and TinkerLabs
   - A session with Srijana Ma'am from TinkerLabs introduced the team to the Design Impact Movement, motivating them to apply.
   - Support from faculty members reinforced the potential to address real-world social challenges.
2. Empathy and Social Impact
   - Observing the family's hardships firsthand (low income, labour-intensive processes, and underused resources) drove the team's resolve to find a practical, high-impact solution.
3. A Shift in Perspective
   - Initially, the focus was on mechanising or upgrading the broom-making machine itself.
   - Over time, the team discovered an untapped byproduct: leftover palm leaves that could be repurposed.

4. Identifying the Problem

1. Low Market Demand and Income
   - Even if the broom-maker could produce more brooms faster, sales remained low; simply making more brooms was insufficient.
2. Ergonomic and Safety Concerns
   - The existing makeshift ("jugaad") motor-based setup caused physical strain and posed risks (dust, water exposure to motor parts).
3. Wasted Byproduct
   - The family routinely burned large quantities of dry palm leaves left over from broom production.

- This created air pollution and lost an opportunity for additional income.

4. Desire to Abandon the Occupation

- Due to financial strain and the recent death of a family member, the broom makers were close to quitting.
- They needed a solution to rekindle hope and generate sustainable income.

5. Design Process and Methodology

5.1 Empathise

- Field Visits and Immersion: The team spent considerable time at the family's workplace, observing the entire broom-making process, living conditions, and resource constraints.
- Hands-On Learning: Team members tried making brooms themselves to understand physical strain, time, and ergonomic challenges.
- Informal Interviews: Rather than formal surveys, extended conversations with the family surfaced daily struggles and concerns (electricity outages, safety issues, sporadic income).

5.2 Define

- Problem Reframing: Initially, the project was about optimising the broom-making machine. However, feedback revealed that boosting production alone would not enhance the family's livelihood.
- Focus on Byproduct: The family's abundant palm-leaf waste emerged as the most promising, low-cost resource for new product lines.

5.3 Ideate

- Trial and Error: The team experimented with palm-leaf waste—soaking, grinding, mixing with various adhesives (natural and chemical), testing drying time, and structural strength.
- Storyboards and Process Flows: Sketches and notes captured how a new "material" could be fashioned into small decor items, cooling curtains, or packaging filler, all with minimal tools.

- Open-Ended Solutions: Instead of prescribing one specific product design, the team developed a *versatile material approach* that the broom-making family (and others) could tailor to local markets and personal skills.

5.4 Prototype and Test

1. Modified Broom Maker
   - Improved motor placement to avoid dust and water damage.
   - Enhanced safety measures and addressed ergonomic concerns (height, user posture).
2. Byproduct “Material”
   - Created small prototypes of items like decor pieces and *packaging alternatives* to show potential usage.
   - Encouraged the family to try shaping, painting, or weaving the byproduct into sellable goods.

5.5 Document

- Photography and Notes: The entire journey—interactions with the family, experimental trials, iterative sketches—was recorded.
- Presentation: A single consolidated file showcasing the machine upgrades, the new material, and how each solution is integrated into the family's daily routine.

6. Key Features and Innovations

1. Repurposed Byproduct
   - Waste to Wealth: Palm leaf remnants, once burned, are now transformed into a raw material with multiple applications (cooling curtains, small crafts, packaging).
   - Low or Zero Additional Cost: The family already possesses the byproduct; only minimal adhesives and simple tools are needed.
2. Ergonomic Machine Enhancements
   - Motor Repositioning: Raised above ground for safety and easier maintenance.

- Noise and Safety Upgrades: Using basic mechanical principles (bearings, RPM calculations) to ensure the motor runs smoothly with reduced risk of user injury.

3. User-Centred Design
   - Accessible and Adaptable: No high-end technology or large investments are required; solutions can be adopted by broom-maker families across India.
   - Incremental Approach: Respect their current skill sets and daily routines, reducing the learning curve.
4. Holistic Livelihood Support
   - Diversified Income: The possibility of selling handcrafted leaf artefacts *in addition* to brooms.
   - Community Empowerment: Children in the family can help by learning arts and crafts skills and fostering pride and creativity.

7. User-Centric Approach

1. Inclusive Stakeholder Involvement
   - Repeated visits to the broom-maker's home/workspace.
   - Testing: Each new prototype was handed over for real-life usage; direct feedback guided iterative design.
2. Positive, Empowering Experience
   - The family recognised they could retain their traditional craft and also generate extra income without heavy capital expenses or skill barriers.
   - The sense of "being heard" and included in the design led to a more trusting and collaborative environment.
3. Sustainability and Socio-economic Upliftment
   - Reusing natural leaf waste cuts down on pollution and offers added income potential.

- Encourages the family (and similarly positioned communities) to stay in the profession, preserving cultural crafts.

8. Technical and Functional Feasibility

1. Engineering and Scientific Principles
   - Basic Physics: Calculating torque, RPM, and safe machine operations.
   - Ergonomics: Adjusting machine height, posture alignment, and motor location to reduce strain.
2. Challenges Addressed
   - Motor Reliability: Elevating the motor away from dust and moisture.
   - Noise Reduction: Incorporating bearings and stable mounting to minimise vibrations.
3. Testing and Validation
   - Hands-On Trials: The family used the updated machine and material prototypes, offering real-time feedback.
   - Low-Fidelity Experiments: Soaking, binding, and shaping palm fibres with various adhesives.

9. Sustainability and Ethical Considerations

1. Environmental Impact
   - Reduces open-air burning of palm leaves, mitigating air pollution.
   - Encourages natural, non-chemical adhesives for safer handling.
2. Resource Efficiency
   - Minimal Additional Inputs: The solution relies primarily on abundant local waste material.
   - Energy Considerations: Machine modifications use existing motors, modestly improving overall safety and durability.
3. Social and Ethical Design

- The solution aims to uplift an at-risk family through financial stability rather than replacing their skills or forcing them to invest in expensive technology.
- Prioritises health and safety by encouraging natural binders and safer machine components.

10. Impact and Scalability

1. Local Social Impact
   - Immediate income diversification for the family.
   - Potential for community-wide adoption if other broom makers replicate the model.
2. Regional and National Adaptation
   - Traditional broom-making communities across India face similar economic and waste challenges.
   - Low-cost, natural solutions are universally appealing and easily adapted to local leaf variants or adhesives.
3. Long-Term Sustainability
   - If the family effectively markets the leaf-derived crafts, they can sustain their traditional occupation, all while exploring new markets (local bazaars, online craft platforms).

11. Teamwork and Collaboration

1. Role Allocation

- Astha and Shriya: Strong interests in problem-solving, user research, and co-creation with local communities.
- Prasenjit: Enthusiasm for mechanical setups and machine design, alongside iterative prototyping.
- Abhay: Skilled in CAD modelling and creative ideation, bridging technical feasibility with aesthetic form.

2. Mutual Support

- Each member took the lead in their forte (e.g., motor mechanics, adhesives testing, user research).
- Overlapping tasks were handled collaboratively, ensuring a fluid back-and-forth in brainstorming and execution.

3. Conflict Resolution

- By remaining open to suggestions and testing solutions directly with the end user, disagreements are often resolved through real-world feedback rather than theory.

12. Presentation and Communication

1. Prototypes and Demonstrations
   - Working broom-maker machine with ergonomic modifications.
   - Decorative and functional prototypes made from the leftover palm leaves to showcase versatility.
2. Visual Documentation
   - Photographs capturing each iteration of the material tests.
   - Simple storyboards showing the family's daily routine, usage of the machine, and the transformation of waste into crafts.
3. Narrative
   - The team effectively communicated how incremental changes in technology (machine updates) and innovative repurposing of byproducts merge to create a robust, sustainable livelihood model.

13. Conclusion and Future Directions

By zeroing in on unutilised palm leaf waste and enhancing the ergonomics of the broom-making process, this project highlights how small, cost-effective innovations can empower marginalised artisans. The synergy between mechanical tweaks and material upcycling not only preserves a traditional craft but also opens new commercial avenues for broom-making families.

Key Takeaways

- Social Uplift: Generating extra income through creative reuse of raw materials once considered waste.
- Environmentally Conscious: Reducing burn-off of palm leaves and exploring natural adhesives for eco-friendly production.
- Human-Centred Process: Continuous engagement with the end-user ensures solutions remain practical, desirable, and culturally relevant.

Potential Next Steps

1. Scale and Replicate: Share insights with other broom-making communities, training them in reusing leaf byproducts.
2. Product Development Workshops: Collaborate with local artisans to refine or expand the *leaf material* range (e.g., coasters, lampshades, packaging fillers).
3. Market Linkages: Facilitate ties with craft stores, local markets, or online platforms to ensure steady sales of these upcycled products.
4. Further R&D on Materials: Investigate diverse adhesives, coatings, or finishing techniques to enhance durability and visual appeal.

In essence, this project stands as a testament to how empathetic engagement, grassroots innovation, and purpose-driven design can bring renewed dignity and livelihood to a centuries-old craft and the people who carry it forward.

Case Study: TinkerLabs and the Design Impact Movement

1. Introduction

This case study explores the critical role played by TinkerLabs within the DI Movement —an initiative supported by Titan to nurture innovation, design thinking, and social entrepreneurship among students. The insights presented here come from an interview with Mandeep Toor, who spearheads TinkerLabs' involvement in the program. His reflections provide a detailed view of how TinkerLabs contributes to the program's planning, outreach, training, and long-term sustainability.

2. TinkerLabs' Role in the Design Impact Project

1. Project Outreach

- TinkerLabs managed outreach to engineering and design colleges, leveraging their human-centred design expertise to encourage student participation.
- They integrated workshops into existing curricula where possible, ensuring a smooth adoption of design thinking methodologies.

2. Knowledge Partner
   - TinkerLabs served as a knowledge and facilitation partner, designing content and guiding students through practical steps of design thinking.
   - They introduced behavioural science elements—often missing in standard academic programs—giving participants deeper insight into user-centric problem-solving.
3. Handholding from Ideation to Prototype
   - From initial brainstorming to final prototypes, TinkerLabs provided technical know-how, process advice, and mentorship.
   - Students were encouraged to focus on the problem rather than the solution, ensuring a strong foundation for sustainable, user-centred innovations.

3. Program Value and Relevance

1. Practical Application for Students
   - TinkerLabs' sessions demonstrated how real-world organisations use design thinking and innovation to tackle social and commercial challenges.
   - Students recognised these skills' relevance for future employment or entrepreneurial ventures, enhancing their resumes and career trajectories.
2. Tangible Outcomes
   - Unlike purely theoretical academic tasks, the program culminated in actual prototypes and *shortlisted solutions*.
   - This hands-on completion provided participants with a heightened sense of achievement, reinforcing the usefulness of DI Movement within and beyond college life.

3. Competitive Edge
    - The emphasis on industry-grade processes, continuous guidance, and the possibility of incubation set this program apart from other extracurricular or purely classroom-based activities.

4. Engagement Beyond Academia

1. Integrated Workshops
    - TinkerLabs facilitated participatory sessions—co-creation rather than one-way lectures—where students actively engaged in developing solutions.
    - Their approach differed from traditional teaching, focusing on interactive methods, real-time feedback, and iterative improvements.
2. Sense of Completion
    - Students experienced a robust end-to-end journey from understanding the problem to testing prototypes.
    - Multiple rounds of shortlisting, along with final outputs, gave them a visible milestone and sense of accomplishment rarely found in typical coursework.
3. Ongoing Ecosystem Building
    - TinkerLabs' relationships with faculty, college management, and potential social-sector partners meant that the learning extended beyond the immediate cohorts.
    - Word of mouth led other institutions and NGOs to adopt similar design thinking processes, amplifying the program's reach.

5. Visibility and Career Opportunities

1. Industry Recognition
    - Titan's brand and the structure of the Design Impact Movement gave high credibility to students' projects.
    - Certificates, mentorship experiences, and showcased prototypes elevated participants' profiles in the hiring processes.

2. Future Entrepreneurial Pathways

- For students inclined toward entrepreneurship, the incubation track offered by the program (in partnership with Titan and other ecosystem players) helped them continue developing their concepts post-competition.
- TinkerLabs' emphasis on practical problem-solving sets a strong foundation for potential startups or social enterprises.

3. Portfolio Enhancement

- Designing real-world solutions and applying behavioural science methods gave participants distinct talking points in interviews, plus robust portfolio pieces.

6. Faculty Involvement and Insights

1. Collaborative Mechanisms
   - Faculties were integral from the start, promoting the program to students and integrating TinkerLabs sessions into the college's academic framework.
   - Regular updates and open communication helped address logistical issues (e.g., scheduling, lab access, academic credits).
2. Added Value of Faculty Insights
   - Faculty members provided domain-specific critiques, knowledge of student strengths, and academic leeway (e.g., project credits), ensuring alignment with college requirements.
   - Faculty also helped solve student bottlenecks—both technical and motivational—creating a supportive learning environment.
3. Alignment with Industry Trends
   - TinkerLabs' ongoing consulting work with corporate and social-sector clients kept the content current. Faculty, in turn, supported the integration of these evolving best practices into their own curricula and project evaluations.
4. Partnerships and Collaborations

- TinkerLabs' network of industry partners, nonprofits, and design experts allowed students to see broader applications of design thinking, bridging the gap between classroom theory and practical impact.

7. Ecosystem Impact

1. Long-Term Relationships
   - TinkerLabs fosters continuous engagement, revisiting colleges for new cohorts, building trust with faculty and management, and ensuring repeated cycles of the program.
   - This repeated exposure cements design thinking in institutional cultures, making innovation programs more sustainable.
2. Extending Impact Beyond Participants
   - Students applying their newfound skills in NGO projects, community ventures, or internships spark interest among new stakeholders—who then seek to adopt or collaborate with DI Movement.
   - Such ripple effects cultivate a broader ecosystem of social innovation, with TinkerLabs often invited to facilitate or replicate their methodologies in allied institutions.

8. Program Outcomes and Feedback

1. Evaluation Metrics
   - Student Transformation: Shift in mindset from "solution-first" to "problem-first", their ability to pivot ideas, and maturity in user-focused.
   - Prototype Maturity: Clear demonstration of how thoroughly students integrated feedback loops, user insights, and design thinking principles.
   - Faculty Engagement: Number of faculty members actively guiding teams, providing academic accommodations, and building synergy with TinkerLabs.
   - Program Reach: Growth in institutional partnerships and student sign-ups, measured annually.
2. Sustainability and Ongoing Success

- TinkerLabs underscores consistent follow-through on promised benefits (e.g., timely incubation, mentorship continuity) to maintain credibility.
- A multi-year, consistent strategy—rather than frequent overhauls—allows the program to scale up effectively, refine processes, and reliably track longer-term impact.

3. Challenges and Recommendations
   - Incubation Gaps: Delays or partner changes in post-project incubation can undercut trust, so alignment and timely support are crucial.
   - Clarity on Next Steps: Students must see a clear path beyond the workshops—be it advanced training, social enterprise support, or career placements—to stay motivated.

9. Sustainability and Future Improvements

1. Timely Alignment with Promised Outcomes
   - Ensuring on-schedule delivery of all program elements (incubation, funding announcements, partnership follow-ups) is key to reinforcing student and faculty confidence.
   - Avoiding long gaps between phases (e.g., final prototyping and incubation) sustains momentum and secures better solutions.
2. Long-Term Strategy Consistency
   - Repeating the tried-and-tested approach over multiple cohorts with minor iterative improvements yields stronger data on efficacy.
   - A stable, coherent roadmap over at least 2-3 years is recommended to gather substantial evidence of program success and areas of refinement.
3. Emphasis on Co-Creation
   - Moving from simple knowledge dissemination to interactive creation fosters deeper learning and ownership.

- Incorporating digital tools or platforms where students can actively build, share, and showcase solutions can amplify engagement, attracting more stakeholders into the ecosystem.

4. Integrating Technology and Behaviour Science
   - TinkerLabs' expertise in behavioural science can be expanded to other aspects of the program—e.g., habit-forming tools, digital engagement, and sustaining student interest.
   - Such expansions bolster the program's distinctiveness and ensure advanced, industry-aligned learning experiences.

10. Conclusion

The collaboration between TinkerLabs and the Design Impact Movement reflects a holistic approach to nurturing socially conscious, design-driven innovation among students. Through hands-on workshops, behavioural science integration, and close faculty partnerships, TinkerLabs ensures that participants not only develop prototypes but also transform their design thinking abilities for long-term success—be it in corporate, entrepreneurial, or social-impact realms.

Key Takeaways

- Human-Centred Focus: By helping students "fall in love with the problem," TinkerLabs cultivates deep empathy and user-centric creativity.
- Practical, Iterative Learning: Students gain real-world problem-solving expertise, culminating in tangible prototypes that can attract incubation or industry recognition.
- Sustainable Ecosystem Building: Ongoing relations with faculties, college administrators, and NGO partners amplify the program's scope, creating lasting networks of innovation.
- Strategic Consistency: Aligning timelines and ensuring follow-through on promises (incubation, funding, further mentorship) fosters trust and momentum.

Overall, TinkerLabs' involvement underlines how structured design thinking, industry relevance, and long-term ecosystem engagement can transform an educational

program into a thriving incubator for impactful innovations and future-ready professionals.

Case Study: Integrating Socially Responsible Design at NIFT through the Design Impact Program

1. Introduction and Context

This case study focuses on the integration of the DI Movement Program—an initiative led by Titan in collaboration with TinkerLabs—into the curriculum at the National Institute of Fashion Technology (NIFT). The insights are drawn primarily from the experiences and reflections of Dr. Preetha Bhattacharya Hussain, a professor, and the current Chairperson of the Foundation Program at NIFT.

Dr. Hussain has over 25 years of experience as a design educator and is deeply committed to infusing social consciousness and sustainable practices into design pedagogy. Her department, Accessory Design (which also includes product design, UI/UX, and lifestyle design), has consistently championed socially oriented, empathetic design modules. Within this context, Dr. Hussain introduced a “Design and Society” module that incorporated the DI Project to help students move from classroom theory to real-world immersion and potential incubation of socially responsible ideas.

2. Background and Motivation

NIFT’s Long-Standing Relationship with Titan

- NIFT and Titan have collaborated for nearly three decades, with many Titan employees (e.g., Tanishq and Fastrack teams) being alumni of the institute.
- When Titan launched the Design Impact Movement, it naturally resonated with NIFT’s ethos of fostering design solutions with deep human and social values.

Genesis of the Social Design Module

- Dr. Hussain and colleagues undertook a curriculum review every three years, looking for ways to integrate social design and SDGs (Sustainable Development Goals).

- They created a 48-hour module called “Design and Society”, intended to introduce design students to empathy-driven projects, deeper user research, and real-world problem-solving.

Connecting with DI Movement

- Through an alumna, Ms. Ritika Gandhi, at Titan, Dr. Hussain learned of the DI Movement’s goal to encourage socially responsible design among engineering and design students.
- Seeing a strong synergy between the DI Movement goals and the new “Design and Society” module, Dr. Hussain invited TinkerLabs (Titan’s knowledge partner) to co-facilitate workshops, thus merging industry insights with academic structure.

3. Program Alignment with Academic Goals

Embedding Social Responsibility in Design

- Traditionally, design education addresses consumer-driven markets. NIFT recognises a need for ethical design that acknowledges social and environmental externalities.
- By integrating DI Movement, Dr. Hussain’s students were empowered to explore design solutions aligned with the UN Sustainable Development Goals (SDGs), from “zero hunger” to “dignity of labour” for underrepresented groups.

Balancing Academic Timelines

- NIFT semesters run from August–December and January–May, culminating in final juries or industry internships.
- The DI initiative sometimes extended beyond these dates, meaning students' prototypes or solutions often had limited time for full realisation before graduation.
- Despite time constraints, successful synergy was achieved in the year where TinkerLabs organised face-to-face sessions early in the semester, enabling better planning and deeper student engagement.

4. Methodology and Implementation

Three-Pronged Pedagogy

1. Academia: The 14-week “Design and Society” module at NIFT provided a structured classroom framework, continuous assessment, and faculty mentorship.
2. Industry/DI: Titan’s Design Impact Movement offered a national platform for recognition, potential incubation, and funding of the best social design solutions.
3. Expert Facilitation: *TinkerLabs*, a behavioural and innovation consulting firm, conducted immersive workshops, introduced user-centred toolkits, and guided iterative design thinking.

Course Flow

- SDG Alignment: Student teams each selected an SDG or social challenge (e.g., accessibility for wheelchair users, food waste, packaging waste, dignity for differently abled artisans, etc.).
- Deep-Dive User Research: Using TinkerLabs’ method of empathy mapping, behavioural iceberg analysis, and user shadowing, students developed thorough insights.
- Prototype Development: Students iterated with low-fidelity mock-ups, tested them with target users, and refined solutions.
- Final Presentations and Jury: NIFT's internal faculty, plus TinkerLabs' feedback, shaped final prototypes; Titan's DI platform then assessed the potential for advanced incubation.

5. Key Outcomes and Success Stories

1. Adaptive Printing Block for Differently Abled Individuals
    - A student team identified the challenges faced by individuals with cerebral palsy in block-printing Diwali cards.
    - They designed a round-bottomed block with a hand strap, minimising strain, and maximising autonomy.

- This solution progressed to DI's second-phase incubation—a testament to the synergy of empathy-based research and structured design facilitation.

2. Terracotta Food Preservation for Low-Income Students
   - Another group tackled food waste among students lacking refrigeration. They tested terracotta storage containers to keep meals fresh overnight.
   - Though time constraints prevented widespread pilot testing, the concept showcased creative, cost-effective, and sustainable thinking.
3. Waste Fabric Upcycling
   - A student pioneered collecting denim offcuts from labs, creating modular fabric cubes for potential use as blankets or bags.
   - This exploration of circular design exemplified how social and environmental awareness can blend with practical, resourceful creativity.

Student Engagement

- Students regularly stepped beyond the classroom—lunch breaks spent with differently abled community members, interviews with e-commerce delivery riders, shadowing ragpickers, etc.
- Their final reflections indicated heightened empathy, a better grasp of SDGs, and a strong desire to carry forward mindful design practices into future roles.

6. Program's Value to Industry Integration

1. Realistic Problem-Solving Skills
   - By involving TinkerLabs, students received industry-level feedback about user behaviour and complex social ecosystems.
   - This hands-on exposure strengthened their resumes and gave them the confidence to approach industry challenges post-graduation.
2. Potential for Entrepreneurship
   - Dr. Hussain envisions that if such projects transitioned into a final-year "Graduation Project" or extended incubation, students could develop ready-for-market solutions.

- Titan's funding and mentorship offer a rare pipeline from classroom conceptualisation to business venture creation.

3. Elevating NIFT's Reputation

- Although NIFT has historically had strong ties with Titan, the DI Program underscores NIFT's role as an ethical, future-facing design institute.
- Dr. Hussain suggests showcasing student achievements more prominently on social media or corporate channels to scale impact and attract further partnerships.

7. Challenges and Recommendations

Challenges

1. Tight Academic Schedules
   - The mismatch between semester deadlines and DI's extended incubation timeline often forced students to finalise designs prematurely or drop them upon graduation.
   - Some high-potential prototypes could not continue after the academic term ended.
2. Resource Coordination
   - While DI provided a robust platform and TinkerLabs offered workshops, faculty often desired additional resources or technology experts (e.g., material scientists) to push solutions closer to real-world manufacturing.
3. Limited Follow-Through
   - Due to placements or internships, graduating students frequently disbanded project teams, preventing advanced prototyping, pilot testing, or a handover to local NGOs.

Recommendations

1. Early Alignment of Timelines
   - Secure program approvals prior to semester start, allowing TinkerLabs to conduct face-to-face sessions at crucial project milestones (early ideation, mid-semester review).

- Map DI's timeline to NIFT's, ensuring a consistent arc from user research to final presentations.

2. Extended Engagement

- Offer modular expansions of DI in final-year "Graduation Projects," letting select teams refine prototypes over 4–5 months with direct support from TinkerLabs, Titan, and relevant NGOs.
- This sustained engagement can cultivate robust, field-ready solutions.

3. Faculty Masterclasses

- Organise advanced workshops ("Train the Trainer" model) for faculty to stay updated on material innovations, circular design, and social enterprise frameworks.
- A more knowledgeable faculty body can weave social design more seamlessly into the core curriculum.

4. Cross-Campus Scaling

- Considering NIFT's 19 campuses, replicate successful approaches to build a nationwide design network tackling real social problems.
- Foster co-creation across different campuses or disciplines (e.g., Fashion Design, Textile, Accessory, and Communication) for integrated solutions.

8. Future Aspirations

1. Embedding Social Design

- Dr. Hussain hopes more educators and students incorporate SDG-focused frameworks, ensuring that ethical and sustainability considerations become a standard lens in design courses.

2. Stronger Industry-Academia-Expert Triad

- NIFT can deepen relationships with Titan beyond the module—e.g., joint labs, roundtable events, or year-long challenge sprints that feed directly into Titan's incubation pipeline.
- Integrating specialists from fields like pineapple fibre technology, biodegradable plastics, or assistive device engineering can accelerate student innovation.

3. Empowering Students' Social Ventures

- By formalising post-semester continuity, students can start social enterprises or at least see prototypes reach the manufacturing or NGO adoption phase, validating the real-world impact of their design education.

9. Conclusion

The integration of the Design Impact Program with various colleges exemplifies how thoughtful collaboration between academia and industry can transform design education:

- Empathetic Problem-Solving: Students experienced immersive user research, tackling challenges from block printing for the differently abled to waste management and resource upcycling.
- Academic-Industry Synergy: Titan's DI platform, coupled with TinkerLabs' facilitation, enriched NIFT's classroom approach, blending academic rigour with practical mentorship.
- Fostering Ethical Designers: Dr. Hussain's overarching goal—nurturing a generation of designers who weigh sustainability, inclusivity, and social well-being—found concrete expression through DI-based projects.

Ultimately, while time constraints and resource coordination remain areas for improvement, the foundational model is robust. This case shows that industry-academia partnerships, coupled with expert-driven facilitation, can yield powerful learning experiences with the potential to seed real, socially impactful enterprises. By refining timelines, broadening faculty development, and enabling longer project arcs, the Design Impact Program at NIFT can become a gold standard for embedding social design practices into mainstream design education—paving the way for a more equitable, sustainable, and empathetic future.