CO-CREATION IN THE TRADITIONAL *NAMDA* CRAFT OF GUJARAT: A DESIGN THINKING APPROACH

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Abstract

Crafts represent the cultural heritage and wisdom enshrined in their traditional practice. India is home to many crafts practised in the twenty-first century, produced by traditional craftspeople with indigenous tools and methods from the past. Modern industrial production, disconnect with the contemporary consumer and shrinking economic viability pose a question mark on the future, existence and sustenance of many of these crafts.

This case study examines the application and adaptation of the twenty-first century design thinking (DT) approach for reimagining a craft, utilising co-creation as a tool. The collaboration between the craft practitioners and design students led to the development of contemporary and innovative products in the languishing craft of felt making, colloquially known as *namda*, in the Kutch district of Gujarat. This study spanned seven months, spread over two years. The prototype development process offers a basis for proposing a DT approach specific to the crafts sector, endorses co-creation as a strategic tool, and highlights the relevance of empathy with the maker.

The findings indicate the positive impact of DT with co-creation in collective creative endeavours that lead to new knowledge: co-creation for the participants in terms of indigenous cultures, languages and social networking. The findings further resulted in developing a new framework for craft-based design development with the application of DT by utilising co-creation as a strategic tool. Through this framework, it would be possible to nurture the development of DT as a pedagogy for innovation and value creation in terms of knowledge co-creation in the context of crafts. This framework offers a scenario that can sustain the future of craft practices.

Introduction

Design thinking (DT) is a human-centred innovation approach involving a complex set of activities and processes that can help solve complex problems. As a pedagogy, DT gives creative confidence to students to generate innovative solutions (Fischer, 2015, cited in Balakrishnan, 2021, p. 2). It has methods for guiding team-based collaborations and promotes individual knowledge creation as part of the collaborative learning process (Oxman, 2004, p. 90). In today's knowledge and information age, individuals as active participants want to be deeply involved as co-creators in value generation (Ramaswamy and Ozcan, 2014, p. 1). Co-creation with an application of the DT approach is the collaborative development of value with varied participants, which can be actualised and embodied in domains of experiences and innovation.

The literature is replete with the application of DT in various scenarios but needs to be more present in the context of crafts. The outcomes of design co-creation or design collaborations as a strategic tool between traditional craft practitioners and designers are well documented; however, its use in conjunction with DT in the context of crafts is limited.

This paper attempts to apply the systematic DT approach to the languishing *namda* craft practised in Kutch, Gujarat. It starts with a literature review of the concepts used in the paper and the application of these concepts in existing studies. It then outlines the adopted HPI DT model used for the study's purpose and describes its setting. Each stage of DT is carried out in the study, and the outcomes are discussed in detail. Finally, the test stage of DT is adopted as a reflection stage to allow the participants to improve the effectiveness of design activities.

This study's findings provide outcomes that have been used to develop a framework that can provide a foundation to use DT with co-creation with the artisans in craft scenarios.

Literature Review

Design Thinking as a concept

The term DT is immersive and contextual, associated with many connotations over the years, which has become a source of confusion. The meaning shifts radically depending on its usage, application, and context (Heskett, 2002, pp. 1–3). It has many references that can no longer ascertain its true meaning. However, “Everyone can – and – does design” and evidence from diverse cultures worldwide in the vernacular design and traditional craftwork prove that everyone can design and design thinking. It is a natural human cognitive process and is key to what makes us human (Cross, 2011, pp. 8–9).

Design thinking, as a concept, is mostly heuristic. It is a technique that relies heavily on complex skill sets, processes and mind-sets to approach problems and find creative and innovative solutions. Anybody may use DT to re-create and rethink systems, networks, and societies that shape our existence. The answers may result in new narratives, artefacts, processes, and concepts (Goldman and Kabayadondo, 2017, p. 4). It has phases that help navigate the development from identifying a design challenge to finding and building a solution (Carroll *et al.*, 2010, p. 38).

Essentially, DT entails empathy and a human-centric approach (Brown, 2008, pp. 86–87). It is driven by creative thinking, iterative learning, and team collaborations to create intended innovative solutions or changes (Panke, 2019, p. 301) by obtaining insights into people’s needs.

Design thinking is also a co-creation process known as “collective creativity” (Sannino and Ellis, 2013, pp. 1–2), with the designer as a participant and collaborator with the user at the centre of its value systems. The value co-creation process may lead to the generation of products, methods, and ideas driven by the concepts of DT (Müller, 2018, pp. 63–65). It involves toolsets, skills, or techniques that can be collaboratively applied across multiple disciplines (Sanders and Stappers, 2014, pp. 5–7). Hence, with the inclusion of co-creation activities, DT can act as an agent for change to complex problems.

According to Gheerawo (2018, pp. 28–29), co-creation and co-design are often used as DT representations. She emphasises DT as an integrative approach to design with other disciplines such as social science, anthropology, technology, science, business, policy, and government. Design thinking can allow for greater creative freedom and relevant outcomes, but she argues that frameworks and systems must be developed to define the DT process functionally and realistically. Hence, DT could represent a collective approach, with people of different backgrounds and communities working collaboratively to create innovative ideas more involvedly.

Design thinking as pedagogy

Design thinking as a pedagogy is applied across multiple educational scenarios, from K-12 education to medical, engineering, and management studies. It is emerging as an alternative approach to creative scientific thinking (Owen, 2007, p. 17), geared towards subjective, rational, and abductive reasoning (Dorst, 2011, pp. 521–526).

Design thinking looks at problem identification from a human-centred point of view by identifying needs, problem definition, and ideations, developing prototypes, designing solutions and testing them (Luka, 2014, pp. 68–69). These are iterative cycles where changes are incorporated into the prototypes as part of the constant feedback loop. Teaching design student reflexivity from theory, research and practice through DT is an essential aspect of design education, representing a pragmatic approach to ideas and their application (Chon and Sim, 2019, pp. 187, 195–198).

Cassim (2013, pp. 200–201) explores students’ reflections as being inclusive toward an interpretation of the design process and the effect DT can have on the development of an individual as a future designer. He suggests that design education should adopt innovative approaches and be stimulated by environmental, ethical and social concerns. Hence, teaching through DT is essential for acquiring knowledge and perception through experiences, self-reflection, and senses.

Co-Creation

Co-creation is used as a method, agenda, or instrument, in design and innovation initiatives. According to (Sanders and Stappers, 2008, pp. 6–7), design co-creation evolved from participatory design as a mainstream approach due to the acceptance of co-creation as a process and an ethos. Co-creation refers to the entire process of a design or innovation project involving different stakeholders in various project phases, and aims to create desired futures, from the planning and research phase to the implementation phase (Sanders and Stappers, 2014, pp. 10–

11). Many co-creation activities are open-ended since their objectives frequently outline significant challenges in complicated systems. Concurrently, when diverse individuals participate in an activity, the different viewpoints that transform the outcomes should be considered (Santos *et al.*, 2018, p. 124).

Park (2012, pp. 79–80, 90) argues that user requirements are an essential component of design. A design can be impacted if the design process does not appropriately identify the users' needs. Hence, co-creation could be an equitable interactive process between user and designer to share values and expertise and to establish new realms of collaborative creativity.

Design thinking, Craft and Co-creation

Traditional design education relied heavily on isolated studio instruction (van Dooren *et al.*, 2020, p. 1), with no interactivity between participants or co-creation tools. However, research has highlighted the significance of collaborative, project-based learning in design education and community-driven co-design process (Meyer and Norman, 2020, pp. 17–18, 34–35, 39; Rauth *et al.*, 2010, pp. 1, 7).

The profession of design emerged out of crafts, and methods like DT evolved and continue to evolve to address the ever-increasing complexities addressed by design (Redström, 2020, p. 85). On the other hand, craft is rooted in its traditions and processes, relying on previous experience. Design thinking and co-creation offer an approach and tools to strengthen creative ability (Santos *et al.*, 2018, p. 117). Design thinking can thus revitalise traditional handicrafts, where culture is responsible for product sustainability, and a human-centred outlook is essential for makers and users (Li *et al.*, 2019, p. 23).

In the Indian context, design did not emerge out of craft practices but was imbibed as a post-independence concept from the industrialised world. Crafts evolved in India in its agrarian economy, with the artisan as the designer and producer who created artificial objects for rural life. Indian crafts' prior product clientele has mainly been replaced by the needs of the contemporary consumer within and outside the country, with whom the artisans feel disconnected (Balaram, 2016, pp. 18–24, 63). Consequently, a lack of commensurate returns and market disconnect threatens the very existence of crafts in India, even though there is a worldwide emphasis on handcrafted products (Bissett-Johnson and Moorhead, 2019, p. 3).

Design collaboration between artisans, designers, and design students helps the artisan understand market demands and, at the same time, brings an understanding of the process and traditions of the craft to the design students (Chuenrudeemol *et al.*, 2012, pp. 327, 337). A recent study looked at the application of co-creation between a student and an artisan in a design project in India (Dholakia and Parmar, 2021, p. 71). Co-creation through the application of the design process can facilitate knowledge sharing across interacting participants not limited to indigenous knowledge about the craft; it extends to other knowledge areas, such as local history, cultures, and digital technologies (Chudasri, 2019, p. 16). Thus, co-creation in crafts can be extended amongst several stakeholders to transform communities into "creative craft spaces" (Suntrayuth, 2016, p. 5).

Research gap

The literature review establishes that many studies have been conducted applying co-creation across various disciplines, including the craft sector. The application of DT in the craft and the academic context has also been explored. However, co-creation with DT has not been examined in the context of Indian crafts. Hence, it is relevant to explore the application of co-creation as a tool through the pedagogical approach of DT for innovation in the context of traditional Indian craft practices.

Research Methodology

For this case study, the teaching and learning strategies adapted by the research team was the HPI DT model of the Hasso Plattner Institute, School of Design Thinking (HPI D-School) developed at the University of Potsdam, Germany. The model is based on (Human) desirability, (Business) viability and (Technology) feasibility with innovation at its centre, as shown in Figure 1 (left), for effective problem-solving and innovation. The process model has six stages, as shown in Figure 2 (right).

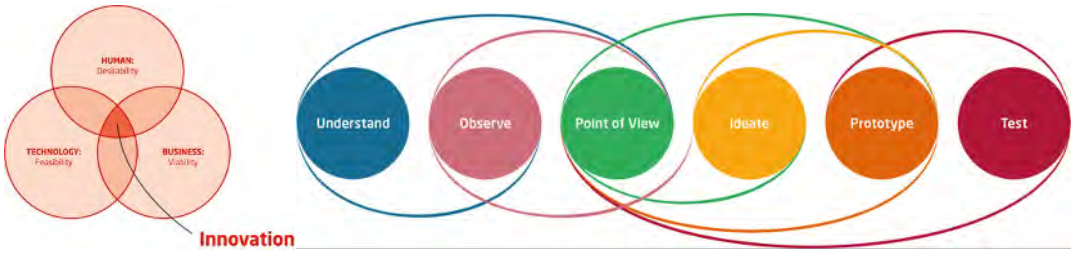

Figure 1. (left) & Figure 2. (right). HPI DT model.

Source: https://hpi-academy.de/en/design-thinking/what-is-design-thinking.html

The HPI DT model encourages collaboration across disciplines, within teams, in an iteratively linked six-step approach. The ‘understand’ phase entails researching to gather relevant information about the challenge or identify opportunities. The ‘observe’ phase encourages interviewing and observing to gain insights into users' expectations and emotions; here, it is in the context of traditional craft practitioners. The gathered insights are shared and synthesised in the ‘Point of View’ phase. In the ‘ideate’ phase, unique ideas are generated using creative methods and divergent thinking. The ideas are evaluated, categorised, and summarised to create probable solutions through iterations. In the ‘prototype’ phase, selected ideas are made tangible for quick and effective communication. Finally, the prototypes are ‘tested’ for feedback and reflection (Hasso Plattner Institute, n.d.).

The Case

The study was conducted by a research team of two faculty members at a premier Design Institute in India. The research participants were six undergraduate (UG) students of the Textile

Design programme at the Institute and the *namda* craft practitioners of Kutch, India. The students belonged to diverse geographical regions, cultures and traditions of India. The research team and the student participants identified the chosen area for the study as the crafts of Gujarat felt-making, also colloquially known as *namda*. The student worked in a team, which inculcated the concept of collaboration and co-creation within a group. They were comfortable using the DT model for the design project because they had been introduced to applying it in the second year of the UG programme.

This study spanned seven months and was spread over two years. It was conducted in two modules—Module I and II. The details of each module, DT process flow as per its stages and year of study for the students are mapped in Table 1. The research study commenced in the third year and concluded in the fourth year of the student's study programme.

HPI DT Process model - Stages	**Modules of the study (according to the year of UG programme)**	**Details of the module**
Understand	Module 1 – 3rd year	1. Gather and understand existing knowledge of the craft. 2. Include expert viewpoints.
Observe	Module 1 and 2 – 3rd & 4th years	3. Conducting interviews with craft makers and observations in the field. 4. Observing the existing craft trends and consumer needs. 5. Gain empathy.
Point of View	Module 1 and 2 – 3rd & 4th years	6. Synthesising and sharing insights. 7. Framing and defining the design challenge.
Ideate	Module 2 – 4th year	8. Generating ideas individually, with team members, and with the artisan by co-creation and co-design. 9. Sharing ideas for feedback.
Prototype	Module 2 – 4th year	10. Refining ideas to make samples. 11. Develop tangible prototypes.
Test	Module 2 – 4th year	12. Taking expert feedback and learning from reflection

Table 1. Details of the case study modules adapted from the HPI DT process model

Module I

This study module focused on empathy building, observation, reviewing and sharing gathered insights and documentation by the student participants of their research findings of primary data collection through fieldwork and secondary data collection. This module in the third year of the study programme spanned over a month and included analysis of insights from the 'observation' and 'understand' stages.

Module II

The design development in the fourth year of study with the student and mapping of their activities by the research team aimed to identify the design opportunities in the craft cluster.

The students actively used the DT approach, collaboration and co-creation to review and share gathered insights, generate ideas and develop prototypes. It was intended for the students to co-design with the maker to develop innovative product ideas, prototypes, and a product catalogue and present their findings to external experts.

1. Understand

Module 1: The 'understand' phase primarily focused on understanding the traditional craft practices and gathering relevant data through secondary sources of information and conversations with experts.

This began with the researchers introducing the rich history of the traditional craft of *namda*, its practitioners in Gujarat and other parts of India and sessions with experts working in the craft sector. The student team members were presumably inexperienced; the first step of the process was to "become an expert" (Thoring and Müller, 2011, p. 496). They conducted secondary research through available literature and online resources. Their primary focus at this stage was to understand and get acquainted with the historical significance of the craft in India and the rest of the world, its associated processes, and the geographical locations of the craft practitioners. The researchers provided prompts in the form of unpublished craft research documentation reports and specific books on handcrafted textiles to provoke their thinking. Experts conducted interactive sessions to share their expertise in illustrations, observation, and interaction skills to capture the nuances in the field.

The student group made presentations after gathering insights from various secondary sources of information and expert lectures. They developed fieldwork protocols for semi-structured interviews, profiles of craft practitioners, craft processes and photo and video documentation.

2. Observe

Module 1: Students' first interaction with the artisan set the tone towards co-creation. They spent two weeks in the field to observe the craft practice and spent time with the artisans, observing their living and working environments, socio-cultural aspects, and the making process of the traditional products.

The students experienced the maker's empathy, and the perception of the traditional artisan as a practitioner was altered to consider the 'human being' behind the craft. In DT, empathy building is being open to multiple points of view, taking a "people first" approach, and paying attention to subtleties that others may overlook (Brown, 2008, p. 87). The students partook in

the daily activities as an ethnographic study to deeply understand the craft practitioners in their natural settings. Ethnography is about understanding and interpreting a culturally specific environment, including commonalities and differences in everyday situations of people (Holloway and Brown, 2012, pp. 39–40). Ethnography is used extensively in DT to understand user needs, data collection and interviewing. Interviews, contextual inquiries, and participant and non-participant observation were employed to gather compelling insights into the makers' processes and mindsets (Liu and Lu, 2020, p. 109).

The observations revealed the largely manual process of *namda* using the wet felting technique. The artisans used basic tools in Gagodar, Mundra and Nakhatrana in Kutch, Gujarat. A hand-operated carding machine is the only mechanised equipment for carding the wool. Floor coverings, horse saddles, and prayer mats are traditional artisanal products. However, one of the artisans was experimenting with making toys, bags, jackets and caps. These observations acquainted the students with adaptations of tools and processes for making three-dimensional objects in the *namda*.

Figure 3. Students observing and taking notes in *namda* artisan's workshop. Image courtesy of Rupali Pandit

Figure 4. Traditional horse saddles made in *namda*. Image courtesy of Ayushi Kadam

Figure 5. Some new products made with needle felting in Kutch. Image courtesy of Ayushi Kadam

Module 2: The participants conducted an online market survey to gain insights into the current market trends and consumer choices of felted and related craft products available in domestic and international brands (Bilge *et al.*, 2017, p. 7; Felt Fetish, 2020; Smith Maxine, 2020). The reason for choosing the online survey mode was the COVID-19 pandemic and the lockdown declared by the Government of India. This provided an unprecedented challenge and an opportunity to collaborate virtually. The students proved agile and quickly adapted to the new learning mode and communication tools.

3. Point of view

Module 1: The ‘observation’ and ‘understand’ phases led to synthesising field and secondary research insights. The students shared their insights through storytelling and narratives through

presentations and discussions, reflecting the maker's perspective. Narratives or stories help organise and structure unique experiences by which interpretations are conveyed (Beckman and Barry, 2010, p. 155).

The *namda* craft in Kutch is done with a unique inlay technique for felting, unlike in other parts of the country. Only three artisans from the Pinjara-Mansuri community continue to practise this craft as a traditional occupation. According to them, the craft came to Gujarat from Sind through migration. Many have left this languishing craft to find better opportunities owing to the decline in demand for traditional *namda*. The creation process remains simple and handmade using the *desi or* local breed sheep wool, making it a sustainable practice. Insights into the *namda* processes led the student team to understand the existing and unique possibilities of the craft. The students compiled their in-depth study of the craft through research documentation.

Figure 6. The unique inlay felting technique practised in Kutch, Gujarat. Image courtesy of Ayushi Kadam

Module 2: The craft product survey done by the students gave insight into consumer preferences. There were no notable product developments in *namda* craft in India, but internationally, many innovations have been tried in the product development and application of felt making. The participants chose home lifestyle products for design development based on the trend towards nesting at homes and the increased demand for home utility and decor products in the COVID-19 pandemic (Gupta, 2020; McKinsey & Company, 2020, pp. 19–22).

The insights formed thus: the prototypes should be developed using the existing skill sets of the craft practitioner, avoiding raw materials external to the craft, given the pandemic lockdown situation. Another criterion was that the prototype development should be sustainable so that the craft practitioner could recreate it without outside intervention. It should be feasible and completed within the time frame of Module 2.

The further refinement of the insights enabled articulating the challenge statement: Co-designing contemporary table-top accessory products in the craft technique of *namda* as

practised in Kutch with the identified artisan. With the design challenge as central, the students focused on translating their ideas.

4. Ideate

Module 2: For the 'ideate', the research participants first developed a visual concept board inspired by the natural desert terrain of Kutch. This provided a look, colour, and mood direction for the prototypes. Due to the pandemic, the students worked with the means available to them, like, sand and mud from their immediate surroundings, turmeric, chilli powder, flour, lentils from their kitchen, etc., at their homes to develop initial product ideas. It indicated a solution-oriented creative mindset.

Figure 7. The concept for felted trays using lentils and its digital visualisation. Image courtesy of Aditi Shroff

The student participants reached out to the *namda* craft practitioner and taught him to connect via video calling, as this method was unknown to the artisan. They also initiated the artisan to take photographs and videos through his smartphone, which he shared with the students. Consequently, the artisan was familiarised with social media for collaboration.

The students worked individually, within the team, and with the artisan to generate and refine design ideas. The research team gave regular feedback through online meetings. The ideation phase was most productive in its creative output as the participants and the artisan co-created design ideas.

5. Prototype

Module 2: The students, the artisan and the research team selected the most promising ideas. Initial prototyping was done with newspapers and paper sheets. These prototypes proved valuable in conveying the physical aspects of the conceived designs, while the digital versions provided the aesthetic elements and specifications. The students discussed with the artisan and revised the ideations. They shared the ideas with the artisan for final prototype development.

Figure 8. Paper prototype for tray. Image courtesy of Aditi Shroff

During the product translation with wool, the maker suggested changes that led to a divergence from the visualised concepts. The artisan incorporated traditional elements like *kingri* (triangular edges) and the product's thickness that were not conceived earlier. This iterative DT and co-creation approach, emerging from collaborative creative exchanges, benefits the students and the artisan.

6. Test

Module 2: The final products were completed and presented to experts for feedback. The review of the work was based on applying the DT approach, relevant research, defining a design challenge, ideations, prototype specifications and the final products. Academic experts with a background in design practice were satisfied with the work but suggested minor alterations in the specification and costing sheets. They also asked the students to reflect on the overall process and project outcome.

External experts appreciated the artisan's translation and adaptation of the concepts. They, however, suggested improvements in structural stability. The experts noted the achievement of the students accomplished singularly with online collaboration.

The reflective journey improves the effectiveness of design activities through interpretations, reviews, and modification of completed work (Tracey and Hutchinson, 2013, p. 29). It fosters a growth mind-set and teaches participants to value the fluid, adaptable and unique approach for creative, collaborative endeavours. Hence, the HPI-DT model was adapted, wherein expert feedback was sought instead of the user test, and the students' reflection was the focus.

Figure 9. The felted table-top accessories with specifications. Image courtesy of Gulmamad Pinjara

Findings and Discussions

This craft-based design project involved collaborative activities at various stages of DT. In this study, the term co-creation refers to the interactive, collaborative and creative activities used as a tool that leads to knowledge co-creation in terms of local languages, food, culture and traditions. As a pedagogy, DT enhanced the assimilation of knowledge and promoted creative thinking, empathy, communication, group learning, and students taking charge and being accountable for their learning. When hands, hearts, and imagination are used for creative problem-solving, the participants learned that innovative outputs could be achieved with limited resources.

Applying the DT approach and the co-creation concept had two advantages. The students gained experience understanding the 'human' behind the craft and the confidence to use this approach in future professional collaborations. The craft practitioner, in turn, benefitted from acquiring new design directions, colour palettes, product layouts, the confidence to experiment with new products, use of online social media networking and an openness to collaborate. However, the artisan faced challenges during the prototype development—like rolling felted sheets, which determine the thickness and hardness of the final products. These findings were revealed in the post-study interview by the researchers. Unlike the traditional horse saddles and floor coverings, the trendy yet crafted product range of table-top accessories signified the modern lifestyle. The co-creation thus led to innovation in the craft outcome giving it new meaning, form, scale, application and use. This provides a systematic approach, as suggested by Gheerawo (2018, pp. 28-29), for fruitful future collaborations between the designer and craft practitioner, ensuring the craft's sustainability.

Design Thinking and Co-creation Framework for Innovation in Crafts

In the context of crafts, DT can be used as a pedagogy and strategy for product innovation and co-creation as a tool for value co-creation. DT promotes collaborative work; hence, co-creation can be used in a scenario where the artisan can be the co-creator and co-designer in the "collective creative" activities.

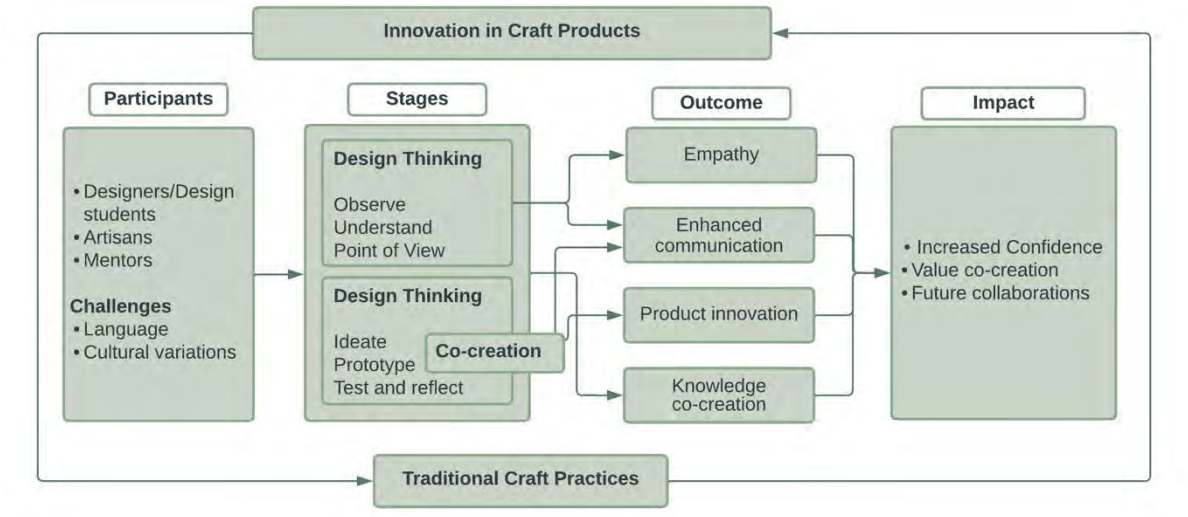

Figure 10. Design Thinking and Co-creation Framework for Innovation in Crafts

The framework defines the context as traditional craft practices with the intended purpose of innovation in craft products. The participants, who can be designers or design students with a background in DT, begin with ‘Understand’, followed by 'Observe’, engaging with the artisans in their native settings to gain perspectives leading to empathy. Thus, the designers gain insights to form a ‘point of view’ and understand the challenges leading to enhanced communication. Co-creation is embedded in the ideate and prototype phases wherein the artisan actively participates in the process leading to product innovation. The ‘test’ and ‘reflection’ leads to improved design activities. The DT approach assimilates knowledge co-creation for all the participants. The impact is in the form of increased confidence and value co-creation and opens avenues for future collaborations. Hence, the DT–co-creation framework can be used for innovation in the context of crafts.

Conclusion

Crafts in India had customarily prospered on royal elites, rural markets, and religious requirements detached from modern design. This study, as a case, describes the application of the DT approach of contemporary design in a craft scenario, emphasising empathy with the maker and the use of co-creation by the design students. It led to innovation and value co-creation for all the participants.

Based on this outcome, a framework has been proposed to apply DT as a pedagogy for innovation and future collaborations in crafts. This study was based on one specific craft; therefore, future studies are required to test this framework in other craft scenarios.

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