

# Creativity and Innovation in Healthcare: Tapping into Organizational Enablers through Human Centered Design

Zuber, C. & Moody, L.

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**Abstract:**

There is an increasing drive in Healthcare for creativity and innovation to tackle key health challenges; improve quality and access; and reduce harm and costs. Human-Centered Design (HCD) is a potential approach to achieving organizational innovation. However, research suggests the nursing workforce feels unsupported to take the risks needed for innovation, and leaders may not understand the conditions required to fully support them.

The aim of this study was to identify enabling conditions that support frontline nurses in their attempts to behave as champions of innovation and change. A HCD workshop was undertaken with 125 nurses employed in clinical practice at Kaiser Permanente. The workshop included empathy mapping and semi-structured questions which probed participant experiences with innovation and change. The data were collated and thematic analysis undertaken through a Grounded Theory approach.

The data were analyzed to identify key enabling conditions. Seven enablers emerged: personal need for a solution; challenges that have meaningful purpose; clarity of goal and control of resources; active experimentation; experiences indicating progress; positive encouragement and confidence; and provision of psychological safety. These enablers were then translated into pragmatic guidelines for leaders on how the tools of human-centered design may be leveraged for innovation and change in healthcare.

**Key words:** human-centered design; innovation and change; empathy; design tools; prototyping; nursing leadership

## Introduction

*“When we first think of creative organizations, design firms, advertising agencies, or tech startups typically come to mind. Building a creative workforce takes more than hiring a bunch of designers and hosting happy hours. It requires a mindset shift that begins with leadership.*

*I’ve observed leadership styles across diverse industries: teams in financial services, working with frontline customer support; healthcare organizations, improving patient experiences; and tech companies, learning new ways to retain talent. These team leaders didn’t come from “creative” backgrounds — they weren’t innovation experts, designers, or writers; they were sales leaders, human resource specialists, and software engineers. And they led their organizations in ways that allowed every individual to participate creatively and arrive at better solutions, even when the path was unclear.”*

Tim Brown, IDEO <sup>1</sup>

When reflecting on your confidence level in your own personal creativity, or in your ability to unleash the creative potential in your workforce to address complex challenges, is your confidence level high? Can you articulate an approach to change that goes beyond supporting incremental improvements or spreading existing best practices? Do you know what your workforce needs to fuel creative approaches to organizational innovation, and what your role is in helping to lead that charge?

Healthcare is in need of fresh thinking and creative problem solving for both day to day and transformational challenges.<sup>2, 3, 4</sup> The demands on nurses and other healthcare professionals to lead this change requires that innovation be embraced as a core competency rather than an extra skill.<sup>3, 5</sup> This article introduces Human-Centered Design (HCD) as one approach to innovation. A study is shared, in which frontline nurses were asked to reflect on their attempts to champion innovation and change. Their replies have been used to identify organizational enablers that support innovation. The authors propose actions that leaders can utilize to actively leverage the expansive tools of HCD. These should enable nurses to become champions of innovation and change, with the goal of benefitting their organizations and the patients they serve.

### **Human Centered Design as an Approach to Innovation**

With the rapid speed of change in health and healthcare needs, a leadership team and workforce should be equipped to lead the creation and development of more radical innovations.<sup>2, 3</sup> They need to take the principles of safety and design into new ways of working in emerging and more complex settings. Healthcare thought leaders have stated that it is critical for healthcare workers to develop competency for innovation,<sup>2, 3</sup> even though it is believed that the large organizations in which innovation needs to occur are typically 'genetically programed' to preserve the status-quo.<sup>5</sup>

HCD, also called Design Thinking, is argued to be an approach that is particularly well suited for this challenge.<sup>6, 7, 8</sup> It is a collaborative, people-focused and impactful approach to organizational innovation.<sup>9</sup> It has been suggested that the substantial

nursing workforce can be harnessed to enable transformational change in healthcare through the use of HCD.<sup>4</sup> However, further knowledge is required to understand how leaders can implement it as a suite of tools and methods to achieve transformation and enable innovation at the frontline.<sup>10</sup>

HCD is a set of methods and tools, as well as a mindset, for solving problems, discovering opportunities, and generating innovative solutions focused on people's needs.<sup>8, 9, 11</sup> The main components are illustrated in Figure 1 below. HCD is an approach to innovation demonstrated widely in a variety of settings from engineering, to business to healthcare.<sup>8, 12</sup> It has been derived from a way of working with innovation popularized by Tim Brown and David Kelly,<sup>11</sup> who are both connected to the Silicon Valley based design firm IDEO. Brown and Kelly are credited with the approach in management circles, along with Roger Martin,<sup>9, 13</sup> from the Rotman School of Management at Toronto University. Evangelists of the methods argue that everyone can learn from the way that designers think and work, to come up with better ideas which enable the development of more innovative offerings.<sup>9, 11, 13</sup>

**Insert Figure 1 here**

A review of the literature in HCD and Design Thinking reveals that while there is some variation in terminology used by universities, consulting firms and businesses using the approach, there is a solid convergence on the key components of the process.<sup>14</sup> For the purposes of this study, the key terms that will be used to describe the approach will include needfinding, ideation and experimentation.

*Needfinding* embodies the methods and mindsets that focus on the deeper needs of the user(s). Gaining empathy and understanding of the context of users' lives, as well as their stated and latent needs are of utmost importance for this phase.<sup>11, 15</sup> This is often positioned as a key differentiator from other methods.<sup>16</sup> Identification of needs also includes a clear framing, or sometimes reframing, of the problem which is being addressed.<sup>13</sup> *Ideation* is about the creation and generation of ideas toward the identified problem area.<sup>17</sup> While brainstorming is likely the best known phase in HCD, there are numerous methods and tools available in this phase of the approach. *Experimentation* is described as “rapid” and “rough” testing of ideas.<sup>15</sup> Prototyping is a hallmark of this part of the HCD approach. Making ideas real and tangible through prototyping is an important element to allow multidisciplinary teams to participate and collaborate together.<sup>17, 18, 19</sup> All three components are geared toward iterative cycles and deep user empathy and involvement.<sup>12</sup>

## **Achieving Innovation**

Expanding the framing of HCD for innovation, Brown<sup>15</sup> shows innovation at the intersection of three components: the business viability of an idea, feasibility from a technological perspective, and how desirable the idea may be to people. Innovation can begin with any of the three focus areas, viability, feasibility or desirability.

**Insert Figure 2 here**

The uniqueness of HCD is that it begins with desirability and needs from the perspective of human beings. This is the focus and starting point of the innovation approach. The methods, mindsets and approaches are driven through deep empathy for users and the context of their lives to co-create new and better products, services, or experiences. HCD methods provide a way for healthcare services to actively engage with patients<sup>4</sup> in a potentially more effective way than the widely-accepted improvement methodology.<sup>4</sup> Despite the supported advantages and benefits, the approach to achieving widespread adoption of such methods in service sectors such as healthcare, is less developed than in many other industries.<sup>4, 13</sup>

To address this gap, the study described here was undertaken to explore how HCD might be employed to support innovation in healthcare. As a first step, the study demonstrates the application of one HCD tool to enable frontline nurses to reflect on their attempts to behave as champions of innovation and change. The HCD tool is an “empathy map,” used to probe for enablers that support nurses to innovate. These enablers, were mapped to support a proposal on how leaders can apply an expansive set of HCD tools to support innovation by nurses.

### **Empathy Mapping as a Process to Understand Leading Innovation**

One of the most basic human needs is to be understood.<sup>20</sup> However, empathy as a practice in nursing, both self-empathy and empathy for others, remains vague and ill-defined.<sup>20, 21, 22</sup> One HCD tool that allows the innovation practitioner to better empathize with the deep feelings and experiences of a user (such as a patient or colleague) is called an empathy map. The empathy map is a design tool used to aid in the identification of user's latent, or unstated, needs. These maps have been used in a

range of settings, including healthcare organizations.<sup>23</sup> There are different versions of the empathy map available online, often varying only in terms of aesthetics. An example is shown below in Figure 3.

### **Insert Figure 3 here**

The empathy map offers a way to gather experiences at an individual level from a large group of people. It allows the collection of narrative stories and observations, and facilitates placing them into categories of sensory perceptions, needs, and insights.<sup>23</sup> It provides a usable tool that can be readily completed by participants in a workshop setting, allowing for rapid, large scale collection. The categories of 'say' and 'do' (see figure 3) provide context to the narrative story, and the 'think' and 'feel' categories prompt a capture of data beyond the situation itself to help uncover more latent, or unstated needs. In the study reported here, the tool has been used to understand what the user (front line staff nurse) was trying to accomplish as a behavior (being a champion of innovation and change), and identify what they perceive as enablers to do so.

### **Study background and aims**

Research suggests that the nursing workforce feels unsupported to take the risks needed for innovation.<sup>5, 24</sup> Traditional healthcare leadership approaches have been found to be ineffective in guiding organizational transformation, or supporting creativity and innovation in the workforce.<sup>25</sup> The aim of this study was to identify enabling



conditions that support frontline nurses in their attempts to behave as champions of innovation and change. It was intended to gain empathy for their position, identify enablers, and then provide guidance to leaders on actions that could be taken to support future creativity and innovation amongst these front-line workers.

## **Method**

A Grounded Theory approach was taken, using qualitative methods for research as appropriate for a nascent research topic.<sup>26,27</sup> To do this, a workshop employing an empathy map and semi-structured questions was undertaken. It involved 125 nurses engaged in clinical practice at Kaiser Permanente in a hospital, clinic, or home health care setting. All participants were serving in nursing union representative roles. To maximize attendance and participation, the workshop was scheduled during a quarterly gathering of these nurses. The topic for the meeting was the workforce of the future, and their role in helping to prepare their peers for what might lie ahead. Several factors were highlighted that prompted the need for innovation discussions and the need for frontline nurses to be able to coordinate and facilitate innovation activities. These factors included the rapid introduction of new technologies at the bedside; the financial pressures in healthcare due to changes in reimbursement and payment models; the aging workforce and population; and the subsequent shift in patient's expectations about how and where care is delivered to them. Innovation and designing new solutions had not been a common topic at these nurse peer group gatherings, although Nursing union leadership had emphasized a desire for Nursing to be more active in large organizational changes.

## **Procedure**

To conduct the workshop exercise, each nurse was provided with one empathy map and asked to pair up with a person sitting next to them. The group was briefed on how to complete the empathy map and how to interview each other. Slides with instructions were shown at the front of the room. The group was instructed to interview each other, beginning with the following question: "*Consider a time when you felt like a champion of innovation and change. Please describe it to me and share what you were thinking, doing, feeling and seeing during that time.*" The facilitator demonstrated by providing a brief simulation of the exercise which guided the nurses to dig deeper into the user experience of leading innovation. The participants were asked to record the interviews in note form on the empathy map. They were also asked to rate themselves with this question: "*On a scale of 1-5, with one being the lowest and five being the highest, rank how creative and innovative you believe the following view you: a. your family and friends, b. your work peers, c. your manager, and d. yourself.*"

## **Data collection and analysis**

The 125 completed empathy maps, including the exercise and documentation of interview discussions, were collected for analysis. When the data were collated and synthesized, an open coding of themes emerged across the maps.<sup>26</sup> The themes were then refined, and key enablers for acting as a champion of innovation and change were identified. The coding process is broken down and illustrated in Table 1.

**Insert Table 1 here**

## Results

The empathy map provided a large volume of data from which the enabling conditions for innovation and change could be drawn.

Through analysis, seven enablers to being a champion of innovation and change were identified. Brief statements from the participating nurses were also lifted from the empathy maps to provide context following each listed enabler:

- **A personal need for a solution.** The analysis indicated that nurses were enabled when they felt a personal need for the solution itself. They did not mention their engagement for solutions as being solely to meet “organizational” needs. Feeding participants curiosity and learning, providing social time with people they liked, and eliciting a desire to “fix” something that was not currently working in their personal or work environment encouraged them to be creative and innovate.

*Statements from participants: 1. I can't waste any time on hunting for the things I need. It's so frustrating to me. 2. We'll work on it together. It makes it more fun.*

- **Challenges that have meaningful purpose.** Participants looked for and recalled innovation efforts they believed had meaning to them. The desire to help others was a strong motivator to innovate for the participants, as was a felt purpose and passion for the challenge at hand.

*Statement from participant: My sister had the same (illness) and we nearly lost her. I want to be able to help other families through it.*

- **Clarity of goal and control of resources.** The innovation goal to be accomplished needs to be clear. Individuals indicated they were facilitated by the ability to control at least a portion of the resources needed to help find solutions associated with a challenge including, for example, money, the people involved, or the time allotted. There also appeared to be a point at which the resources were enough, but not overly available. Novel solutions sometimes grew from a modest level of resource scarcity.

*Statement from participant: Our little team only had 3 days to figure it out and a (defined amount) of supplies available, but I knew what we needed to accomplish, just not how to do it. We had to be really clever about using (what we had). I was saying ‘put this here, bring me back this information, go find (another needed resource)’, and in the end, it all worked.*

- **Active experimentation.** With access to the needed resources and motivation to find a solution, the next enabler described was the opportunity to apply those resources toward testing out possible solutions. This active experimentation was hands-on and action-oriented. Effectiveness of experimentation was felt to be linked to repeated testing of ideas, meaning that the more someone experimented, the better they believed they became at the activity.

*Statement from participant: I changed (a potential solution) five times. It still wasn't right. But by the 6<sup>th</sup> time I tried an idea, that was it. I finally nailed how to make (the prototype needed) and I'll do it again!*

- **Experiencing progress quickly and visibly.** It was identified that the ability to perceive forward progress was important. Progress was displayed in a variety of ways including clarifying goals, gathering the needed resources, and quickly trying out ideas. The participants often mentioned that 'seeing' the progress resonated more with them than just being told that progress was being made. Additionally, it was important to see improvement happen quickly.

*Statement from participant: A week later I looked down the hallway and there it was. My (colleagues) were actually doing (the new idea). It was happening and I could see it. It wasn't perfect, but it was progress.*

- **Positive encouragement and confidence.** Participants seeking to innovate indicated that the positive encouragement from others around them was important, particularly during difficult endeavors. Positive feedback was found to be important to help identify if a change, or a solution, was working. This feedback was also important to increase their confidence and public encouragement served as a tool to influence others to participate in the solution /change.

*Statement from participant: I was nominated to serve on the committee because of my past work. (They) listed off a number of things I'd taken on. I felt so proud. After that it was easy for me to pull together a team (to tackle new problems).*

- **The provision of psychological safety.** It was found that participants were fearful of how colleagues and peers would react to their ideas and experiments. They worried about being judged negatively. They also felt that management might see innovators as “troublemakers.” To this end, they ranked their managers as having the lowest perception of their ability to champion innovation and change when compared to their peers, friends, family and their perceptions of their own abilities. Therefore, environment and culture that encourages a feeling of safety around innovation was deemed important.

*Statement from participant: I worry so much that (my team) will hate my ideas. So most of the time I just stay quiet. It seems better that way and it doesn't rock the boat. It's just not encouraged around here.*

These enablers are summarized in Table 2, along with references of where they are supported by the literature, and suggestions for leadership actions to encourage and enable front line innovation and change.

**Insert Table 2 Here (landscape)**

## **Actions for Leaders to Increase Innovation**

Each of the identified enablers can be viewed as an opportunity area for nurse leaders to better support the front-line workers in their quest for innovation and change. Leadership actions are discussed in more detail below.

### ***Pair up challenges with people who have a personal need for the solution***

The study found that nurses are more likely to engage in innovation if they believe there is a personal need for it. This is in alignment with the research on "first order problem solving" in healthcare, particularly with the Nursing profession.<sup>24</sup> In this type of problem solving, underlying causes are not addressed, but a short-term fix is used. It provides a faster sense of satisfaction to the problem solver than a deeper "second order," or root cause, approach would create. Leaders should be aware of this, so they can provide the staff guidance and resources to go beyond quick fixes to address the root causes of an issue. This is a challenge, as it has been found that front-line staff may lack competencies needed to go beyond first order problem solving in order to engage in innovation work.<sup>2, 24</sup> However, staff members often have detailed knowledge of what is, and what is not, working. If leaders can better pair front line staff and problem areas they are personally interested in with resources and guidance in innovation methods, this could be a first step to engagement.<sup>24</sup>

### ***Articulate the bigger vision and purpose***

Participants in this study identified the need for challenges that have a meaningful purpose. This personal need is a form of intrinsic motivation that drives individuals to become personally invested in deriving a solution.<sup>28, 30, 36</sup>

*“...although creativity can arise from a complex interplay of motivational forces, motivation that stems from the individual's personal involvement in the work—love, if you will—is crucial for high levels of creativity in any domain”*

*Collins and Amabile,<sup>30</sup> page 1, 1999*

The need for an individual's work to be personally meaningful, irrespective of the level of individual experience, is also highlighted by the Model of Creativity and Innovation.<sup>28</sup> Progress toward meaningful work, as well as the intrinsic motivation that results, is a key component for innovation and creativity.<sup>28, 29</sup> Meaningful work may mean efforts with a personal impact, but can also be defined as work that is seen to help others in a more altruistic way.<sup>30</sup> Based on the coded insights from this study, the understanding of meaningful work includes both altruistic efforts and the identifiable day-to-day hassles that are perceived to be irritants or barriers to a better work environment. Healthcare leaders could envision identifying personal “hassle factors” for nurses or other staff members, and then placing these in the context of a larger purpose. This could facilitate ownership and create excitement about finding a solution.



### ***Empower staff with clear goals and the ability to control a segment of resources***

Nurses described feeling more empowered to make change when they feel that there is a reasonable amount of goal clarity.<sup>28</sup> Clear goals act as a catalyst that leads to a feeling of progression and better workforce engagement. Resources were identified as important. Nurses noted that it is essential to know what resources they have available to apply to potential changes. Ideally, they would have control over how, and when these resources are used. Another study showed that lack of time is a primary limiting factor for nurses to address the underlying causes' problems.<sup>25</sup> Leaders should consider providing a reasonable amount of control over adequate resources, such as identified project time, as well as clear goals to enable creativity and innovation to occur.<sup>28</sup>

### ***Provide time and places for active testing and learning***

If participant's goals are clear and resources are in place, the result is action oriented behavior of active experimentation. The nurses discussed the excitement of trying out possible solutions iteratively, quickly and cheaply. This experimentation, the refinement and testing of ideas, is a way to bring other people along in the change process.<sup>31, 32</sup> Rapid experimentation through tangible prototypes is seen as a powerful way to "change individual work behavior, organizational capability building, and cultural change."<sup>18</sup> When leaders encourage and provide environments for active experimentation, it is likely to have a positive effect on individuals. This creates an open,

collaborative way for others to contribute and become part of behavioral and organizational change.<sup>33</sup>

### ***Break down innovation efforts into smaller components***

Planning for and creating environments for short term wins has been identified as one of the eight steps to transforming an organization.<sup>34, 35</sup> The ability to achieve something easily and quickly creates an environment for further progress toward the desired behavior<sup>36,37</sup> even more strongly than the factor of motivation.<sup>35</sup> Bandura's work on self-efficacy shows that making progress toward a goal provides a feeling of self-efficacy, which serves to enhance motivation itself.<sup>29</sup> Creating scenarios and project planning to enable "quick wins" is likely to reinforce innovation behaviors while building confidence of the innovators.

### ***Make time for encouraging feedback and celebrations***

The positive feedback loop of an experiment that has a quick and positive outcome builds motivation to continue testing changes. This spreads to others and encourages a willingness to try additional ideas "next time" in a virtuous cycle.<sup>28, 29</sup> The empathy map results in this study highlighted an individual narrative of "I can't believe I did it" which was often followed by "I can't wait to do it again". However, participants also compared their views of their own creativity and innovation to their perceptions of their manager's views of them. Generally, participants believed the lowest perception of staff creativity and innovation was held by their managers. Leaders who can provide

positive feedback, while encouraging and celebrating innovation, could reinforce a more virtuous cycle and the intrinsic motivation to innovate.

### ***Support learning that moves the work forward, including perceived failures***

Through their empathy maps, participants highlighted a fear of other people's responses to their innovative behavior. In addition to concerns about their managers' perceptions of their creativity and innovation, participants expressed concern about judgment and criticism from their peers. This finding is in concert with work of Edmondson on what she terms "psychological safety."<sup>24, 36</sup> Individuals in an environment with little trust among peers and management feel judged, and perceive that their capability to innovate is questioned. As a result, they keep their opinions to themselves for fear of harming their reputation and losing the respect of others.<sup>24, 36</sup>

It has been found that where high degrees of psychological safety exist in teams, and individuals feel supported by their leaders, *even when they fail*, people are less fearful of making mistakes.<sup>28</sup> Individuals can then take more risks, recover from setbacks, and develop new innovations. In a supportive environment, even failures can create additional intrinsic motivation and reengagement in the creative process.<sup>28, 37</sup> Empirical research has demonstrated that successful leaders create conditions within their teams to support testing of ideas.<sup>38</sup> They have a level of both trust and joy that supports experimentation,<sup>39, 40</sup> and they are able to use HCD methods more broadly.<sup>31,40</sup> It is suggested, therefore, that if leaders create a supportive environment, while considering how they create work teams to enable the highest degree of psychological safety, innovation may follow.

## **HCD tools to support leadership in innovation**

This study supports the premise that HCD offers an approach that encourages organizational innovation. There is a need for leaders and nurses to have an accessible HCD toolkit to support innovation. Table 3 details a collection of HCD tools, and seeks to demonstrate the potential connection to creating an enabling culture. The HCD approaches are broken into the three primary categories discussed earlier in this article: need finding, ideation and experimentation. These are mapped against the enabler and subsequent leadership actions that tie together the staff enablers with the supportive leadership action and a sample of useful HCD tools and methods.

Table 3 highlights need-finding approaches through tools and methods that gain empathy and understanding for users. It is indicated that these might ultimately connect front line staff members with the needs of people *and* the purpose of the work. Leaders may also benefit from utilizing these tools for storytelling to more broadly create meaning and purpose for the challenges. Experimentation approaches, such as prototyping, could serve as pivotal individual and organizational attributes for developing innovation environments while serving as an active way for staff to build a supportive coalition of supporters.

**Insert Table 3 here. (landscape)**

## Discussion

*“Creative leadership isn’t about leaders simply becoming more creative. It’s about individuals **leading for creativity**. That means you, as a leader, must unlock the creative potential of your organization, no matter the industry. It’s your job to set the conditions for your organization to generate, embrace, and execute on new ideas. It’s a competitive imperative that will keep you ahead in the marketplace.”*

Tim Brown<sup>1</sup>

This study has identified specific enablers for nurses seeking to champion innovative change in a large healthcare organization. While innovation within a healthcare workforce has been noted as critical for transformation, little has previously been written about how to enable this to operationalize widespread change.

Building upon specified enablers, leadership actions and areas of focus have been suggested. These have been mapped to literature which suggests support for these actions. Overall, the actions emphasize approaches to enhance workplace culture and leadership engagement in order to encourage innovation in a manner that directly addresses the needs of front line nurses.

HCD is an approach for influencing and changing an organization’s actions to encourage innovation. It provides an accessible and active approach for nurses and leaders to begin to address healthcare challenges. The empathy map, as an HCD tool,

has been shown to enable effective reflection on experiences and needs. Nurses involved in the study described here may now feel empowered to use the tool in their practice. Future studies will explore their confidence in doing so. In Table 3 a range of additional HCD tools and methods were mapped against emerging enablers and supportive leadership actions, with the aim of providing the beginnings of a roadmap to active experimentation (and, eventually) implementation of HCD within the nursing workforce.

For the nurse leader, these approaches may feel somewhat different from the approaches they have traditionally used. Learning to lead for creativity and innovation may feel uncomfortable at first, but those who have taken the path to human centered design for innovation have a great deal to share and offer. There are active online and in-person forums where healthcare leaders are connecting about innovation and design, and the momentum for these is building. Transformational leaders can feel the same empowerment of a collaborative human-centered approach to innovation as their front-line staff, while they learn and experience it together.

## **Conclusions**

This study aimed to understand the conditions that enable nurses, who comprise the primary workforce in healthcare, to champion innovation and change. It was also undertaken to demonstrate the value of human centered design in this process. Through a workshop-based approach which employed the use of an empathy map, seven key enabling conditions to champion innovation and change, from the nurses' viewpoint were identified. To translate these enablers into pragmatic guidance for

leaders, clear actions and HCD methods and tools have been highlighted. These could support the quest to create champions of innovation and to enable their organizations to transform and thrive for years to come.

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