



# Innovation in thinking and scientific action: the method of Design Thinking for nursing

*Inovando no pensar e no agir científico: o método de Design Thinking para a enfermagem*

*Innovación en pensamiento y acción científica: el método de Design Thinking para enfermería*

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## ABSTRACT

**Objectives:** To report experiences during a post-doctoral fellowship which included acquired knowledge about the method of Design Thinking and its dissemination in a scientific nursing event. **Method:** A report of experience conducted in Canada and the acquisition of new knowledge in research and teaching. **Results:** The fellowship established new knowledge in the fields of research and teaching. The most challenging opportunity was the introduction and adoption of Design Thinking. It increased awareness of the urgency to adopt a new paradigm to think, collaborate, teach, design, plan, execute and evaluate research-related activities. After participants reflected about Design Thinking, there was an opportunity to promote a pilot initiative to translate the knowledge about this concept and observe the participants' positive reception in a scientific event. **Conclusion:** The experience allowed the acquisition of knowledge beyond nursing and the stimulation of critical thinking; this strengthened the confidence to think and innovate in the production of knowledge. **Implications for practice:** It is undeniable that Design Thinking may revolutionize education if it is added to health courses as a cognitive tool, inspired by humanistic and empathic values, that reconstructs human inventiveness; this method assures the quality of services and products while respecting the customer's profile.

**Keywords:** Diffusion of Innovation; Evidence-Based Nursing; Knowledge; Nursing Education.

## RESUMO

**Objetivos:** Relatar experiências vivenciadas durante um estágio de Pós-Doutorado, o conhecimento adquirido sobre o método de *Design Thinking* e a socialização desse método em evento científico de Enfermagem. **Método:** Trata-se do relato de experiência de um Pós-Doutorado realizado no Canadá e da aquisição de novos conhecimentos na área da pesquisa e do ensino. **Resultados:** A oportunidade mais desafiadora foi a aproximação com o *Design Thinking*, pois esse conceito promoveu a consciência sobre a urgência de adotar um novo paradigma para pensar, colaborar, ensinar, desenhar, planejar, executar e avaliar as atividades de pesquisa. Após constantes reflexões sobre *Design Thinking*, houve a oportunidade de promover uma iniciativa-piloto de tradução de conhecimento do método e observar a excelente receptividade dos participantes no evento. **Conclusão:** A experiência permitiu a aquisição de conhecimentos além da Enfermagem, estimulando o pensamento crítico e fortalecendo a destemida capacidade de pensar e inovar na produção de conhecimento. **Implicações para a prática:** É inegável que o *Design Thinking* poderá revolucionar a educação, mediante sua inserção nos cursos da área da saúde, configurando uma ferramenta cognitiva que reconstrói a engenhosidade humana inspirada em valores humanísticos e empáticos, assegurando a qualidade de serviços e produtos, e respeitando o perfil do cliente.

**Palavras-chaves:** Conhecimento; Difusão de inovações; Educação em Enfermagem; Enfermagem Baseada em Evidências.

## RESUMEN

**Objetivos:** Informar experiencias durante una pasantía postdoctoral, como también el conocimiento adquirido sobre el método *Design Thinking* y la socialización de este método en un evento de enfermería científica. **Método:** Se trata de un informe de experiencia postdoctoral realizada en Canadá y adquisición de nuevos conocimientos en investigación y docencia. **Resultados:** La pasantía permitió la adquisición de nuevos conocimientos en el campo de la investigación y la docencia. La oportunidad más difícil fue el acercamiento al concepto de *Design Thinking*, porque promovía la conciencia de la urgencia de adoptar un nuevo paradigma para pensar, colaborar, enseñar, diseñar, planificar, ejecutar y evaluar actividades de investigación. Después de reflexiones constantes sobre *Design Thinking*, surgió la oportunidad de promover una iniciativa piloto para traducir el conocimiento del método y observar la excelente receptividad de los participantes en el evento. **Conclusión:** La experiencia permitió la adquisición de conocimiento más allá de la enfermería, estimulando el pensamiento crítico y fortaleciendo la intrépida capacidad de pensar e innovar en la producción de conocimiento. **Implicaciones para la práctica:** Es innegable que *Design Thinking* puede revolucionar la educación, a través de su inserción en los cursos del área de salud y configurarse en una herramienta cognitiva que reconstruye el ingenio humano inspirado en valores humanísticos y empáticos, asegurando la calidad de los servicios y productos, y respetando el perfil del cliente.

**Palabras clave:** Conocimiento; Difusión de innovaciones; Educación en Enfermería; Enfermería Basada en Evidencia.

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## **INTRODUCTION**

A nursing post-doctoral fellowship that requires both multidisciplinary and transdisciplinary work and involves technological innovation is a great challenge because it necessitates bridging knowledge transfer with other scientific perspectives. In this context, there is a need to learn a specific language for effective dialogue and exchange of knowledge between researchers from different areas, making new concepts comprehensible for nursing professionals, especially in research.

The postdoctoral fellowship began in December 2018, at the Daphne Cockwell School of Nursing (DCSON) at Ryerson University in Toronto, Canada, with the purpose of instrumentalizing the refinement of a research project. During this project, unexpected paths led us to new discoveries. The initial research team started out with two nurse researchers: the postdoctoral fellow and her supervisor; then, two other researchers joined in: one from Computer Science and one from Communication and Design. Later, five nursing graduate students, who were experts in Pediatric Nursing, joined the team along with a PhD student in Communication and Design and a special consultant for electronic games and virtual reality. An opportunity arose to discuss the project in a multidisciplinary perspective because of the recognition of its social importance; during brainstorming discussions, improvement of the project was most frequently discussed.

The aspect of technological innovation within the project focused on the electronic health literacy of children with chronic diseases who therefore faced multiple difficulties. The main challenges of technological innovation included the high operational cost for the development of prototypes, the establishment of partnerships with professionals in the area of technology, and innovation at the university. Nonetheless, as challenges often give way to new ideas, a new way of reflecting on research problems was learned; this new method of reflection stemmed from a scientific thinking / doing method that is still unheard of within the Brazilian nursing research community.

This new method highlights facts, events, and reflections, and it introduces the concept of the Design Thinking (DT) method which was learned in an additional training taken at Science Discovery Zone (SDZ) at Ryerson University (<https://www.ryerson.ca/discoveryzone>). At SDZ, DT guides the work of a research team, students, and collaborators.

This paper intends to report the various experiences of a postdoctoral fellowship in nursing and tap into the knowledge acquired about the Design Thinking method, which seeks innovative solutions to people's needs.<sup>1</sup> It also proposes some preliminary ideas to encourage dialogue among Brazilian researchers to integrate DT as a method which is globally used and has the potential to revolutionize nursing research in Brazil.

## **THE RYERSON UNIVERSITY**

Ryerson University has 20,000 students in various undergraduate courses. The DCSON delivers two undergraduate degree programs, which together constitute the largest contingent of Canadian nursing students with more than 2,300 students. The School also has two research chairs – Urban Health and Design and Evaluation of Health Interventions Tier 1, and two master's programs – one with the option for a thesis and one that offers a master's degree with a Nurse Practitioner certification. Nursing researchers lead several research teams, forming a network of international reach with an intense research environment.

Ryerson University has laboratories and resources to support innovative ideas in digital media and technology, also offering guidance and advice for other areas of research ranging from creative arts to biomedical engineering. The university invests heavily in entrepreneurship with a focus on social impact through social innovation, a current strong trend. That is how the Digital Media Zone (DMZ) (<https://dmz.ryerson.ca>), a world leading accelerator for technology startups, came to be. It helps the academic community build strong businesses, connecting them with customers, financial support, specialists and a community of entrepreneurs and influencers. Through the DMZ, the university provides a space for work, equipment, and training, generating the opportunity to network with others in the field and facilitating entrepreneurial investments for research projects.

## **INCLUSION WITHIN THE RYERSON UNIVERSITY SCIENTIFIC COMMUNITY**

In the first semester of the fellowship, many activities greatly contributed to the expansion of knowledge. The supervisor, as the Associate Director – Scholarly Research and Creative Activity, enabled networking with international scientists through events involving different departments of the university.

Ryerson's intellectual environment offers rich, multidisciplinary learning opportunities. Over a period of 6 months, activities carried out within the scope of scientific, cultural, and social events, as well as academic activities, scientific collaboration, technical consultation, and practical training for research totaled 189 hours, in addition to dozens of hours of readings.

## **POSTDOCTORAL OPPORTUNITIES AND CHALLENGES**

A multicultural country with a melting pot society favors tolerance, acceptance, equity, equality, and inclusiveness. These aspects of society were experienced firsthand within the Ryerson community, which also includes foreign visitors. Any visiting researcher, embedded in the aforementioned aspects of society, receives the support necessary for challenges that may arise, such as language barriers.

Among the opportunities presented, the most challenging was introducing the concept of DT, which destabilized the state of knowledge of the first author as a researcher. DT required constant reflections on the resignification of her role as a teacher while taking the role of student because she was in the DT course alongside undergraduate students. This experience provided the opportunity to think “outside the box” to face intellectual challenges, creating new intellectual partnerships with undergraduate students from other disciplines such as business, biomedical engineering, and business administration, among others. As a result, she discovered new ways of thinking and revealed personal talents, thus expanding conceptual and theoretical knowledge around the possibilities of solutions to various problems, including in the areas of health, science, and scientific practice in nursing.

## **KNOWLEDGE ACQUIRED IN A MULTIDIMENSIONAL PERSPECTIVE**

The first phase of the fellowship enabled the acquisition of new knowledge in the area of research and teaching. By participating in workshops promoted by the Registered Nurses Association of Ontario (RNAO) on Best Practice Guidelines (<https://rnao.ca/bpg>), participants learned about systematic methods of implementation in work environments, including marketing, stakeholder engagement, the development of plans and proposals, and relevant evaluation methods.

Specific to the area of research, the training with qualitative analysis software – Nvivo 11 – expanded practical knowledge with exercises about transcriptions as well as data from electronic research on the web, audio, video, and social media. The workshop used SPSS software for the analysis of quantitative data, enabling practical training with transformation techniques, data management, data automation, data files, and export of output to other computer programs.

Attending the Learning and Teaching Conference at Ryerson University, Learning Together: Collaboration and Community at the Center, taught that learning is a collective effort resulting from the collaboration between students, teachers, instructors, and employees. Together they create and share knowledge, connecting learning inside and outside the classroom, thus recognizing the ways in which learning becomes the center of all actions. During the conference titled Protecting the Rights of Children and Youth in Central America, the Caribbean, and Canada, knowledge was acquired on issues concerning the rights and immigration of children and youth in Central America, the Caribbean, and Canada.

Knowledge about child and adolescent health on a global scale was expanded by attending both classes Health: A Global Perspective and Nursing Trends and Issues, which were taught by the fellowship supervisor. The former, addressing global health, allowed the postdoctoral student to review teaching methods

involving digital educational resources, and the contents taught to undergraduate and graduate nursing students at the first author’s Brazilian home university. Furthermore, a knowledge update in the field of education resulted from guided discussions in the classroom, encouraging students to think within a paradigm of a broad, interconnected, and ethically challenging world.

A promising area, but still unknown to Brazilian nursing, is the medicinal use of cannabis. Participating in three workshops offered by neurologists, psychologists, and nurses, along with the participation of adult patients who use medicinal cannabis, made it possible to learn about the endocannabinoid system, common conditions of use, recognition of medical cannabis patients, differences in strains, and current research. In addition, the innovative role of nurses was presented, including online nursing consultation offered by nurse practitioners to ensure clients’ privacy and anonymity. It is important to note that best practices in nursing in collaboration with the construction of regulations for such practice are being developed in Canada.

## **LEARNING ABOUT DESIGN THINKING**

A special highlight of the new knowledge from this project is the concept of Design Thinking during hours of exercises and reflections presented in the Evidence-based innovation course. The innovative, pedagogical approach, covering DT, was taught during the 12 week long course; it was an academic experience shared with undergraduate students from different disciplines including social sciences and humanities areas with perspectives of administrators, engineers, biochemists, biologists, psychologists, lawyers, and developers / programmers. The course consisted of four business problems (Idea shop) and one capstone project, totaling five cycles of practical learning where the entire method was gradually applied, and at the end of each. Students presented solutions accordingly.

The concept of DT came to revolutionize the way of finding innovative and creative solutions to problems, focused on real needs and not on statistical assumptions. It is a scientific method applied to business problems, with thinking based on these real problems, refining ideas and not arguments. From that perspective, it is observed that the approach is effective in conducting the research, as it is characterized as a systematic way of solving several problems, including the area of health.

The DT method causes a systematic and non-linear way of thinking to solve problems in a collective and collaborative way based on values of maximum empathy among the participants in the process. Problem solving is a collective and collaborative effort, and it must use empathy with all participants of a research process.<sup>1</sup> Kelley<sup>2</sup> states that “Design thinking is not a linear path. It’s a big mass of looping back to different places in the process.”

Empathy is needed to understand the needs of those for whom the solution is being developed. After defining problems,

it is important to recommend and generate a range of possible creative solutions before determining the best one. Creativity is a basic premise to revolutionize the way of finding innovative solutions to problems, making statistical assumptions secondary to creative solutions focused on real needs. Every individual is considered creative and able to contribute with good ideas, and they are placed at the center of development of the solution or product, not just the final consumer; hence, all ideas are welcomed and can be used in the process of creating solutions. Regarding health problems, the DT method is not limited to the multidisciplinary team involved in the patient care process, but it can encompass patients, family members, administrators, and institutional support professionals, among others.<sup>3</sup>

The convergence of ideas from different agents from varying contexts allows the emergence of transdisciplinary solutions, characterizing a work innovation in a multidisciplinary team. The DT method can also favor the incentive and facilitate the contribution of several professionals who collaborate with nursing, harmonizing the ability to respond to problems mediated by conflict of knowledge.<sup>4</sup>

Another benefit of DT is the flexibility to use or cede leadership in the process. Working with people from other areas of activity makes the role of an observer more present, evolving the ability to listen. The skill of listening to people, facilitating the contribution of others, and improving the capacity to respond to conflict are incremented and foster a constructive team atmosphere throughout the process of finding solutions to problems.<sup>5</sup>

## KNOWLEDGE TRANSLATION

Today, one of the professional roles of nurses in the area of social impact of scientific knowledge is that of being a knowledge-broker,<sup>6</sup> that is, introducing new knowledge to specific audiences through knowledge translation actions. Thus, with the expansion of the acquired knowledge, the unique opportunity to socialize it among peers was identified to test the acceptability of the DT concept. We tested the feasibility of DT introduction in the various fields of nursing practice to overcome the *status quo* in the systematic way of solving clinical and administrative problems as well as the production of knowledge. Historically, Brazilian nursing has been guided by the unidirectional systematization of care as a way of incorporating the scientific method of thinking and acting mainly in the clinical context.<sup>7</sup>

Currently, our challenge focuses on consolidating a cutting-edge vision regarding the training of researchers to occupy their places in the global community of nursing researchers.<sup>8</sup> The recent movement of DT in teaching and researching the field of nursing in some countries<sup>9</sup> indicates that we can participate in it by demonstrating the particularities of teaching and researching nursing within Brazilian society, although in Brazil the DT is little known among nursing professionals and no educational initiative for nurses is available.

However, on the occasion of a commemorative scientific event of the professional master's program in nursing at the Universidade Federal Fluminense (August 2019), with the participation of Dr. Camilla Londoño (Science Discovery Zone) by video conference and the presence of Dr. Margareth Zanchetta (DCSON), a pilot DT knowledge translation initiative was promoted with lectures. The audience consisted of 85 participants including undergraduate nursing students, teachers and professionals. The lecture conducted by the author and her supervisor obtained excellent reception for the use of the DT method by the audience, which was composed of students and professionals.

During group exercises, all participants were enthusiastically motivated when sharing solutions and ideas. The audience recognized the high applicability of DT to overcome challenges and seek new ways to solve growing complex problems in the context of Brazilian nursing work. Furthermore, all possible and feasible applications of DT in research projects by undergraduate and graduate students were considered, as well as in team activities and senior research professionals.

It should be noted that DT emphasizes creativity and innovation in addition to bold proposals of new objects of study by redesigning, modifying and building new scientific methods. This argumentation seemed to be fully understood by the audience, which corroborated the importance of stimulating creativity and empathy in nursing programs. For the training of undergraduate and graduate teachers and students, the use of DT initiation workshops is suggested, working along with health organizations for real application of the DT methodology to solve complex problems and explore multidisciplinary collaborations using DT.<sup>7</sup> This suggestion resonated with the audience, confirming that a consensual view of DT can lead to a search for knowledge beyond nursing, hence expanding the scope of critical thinking. Nevertheless, it was discussed that new ways to apply DT can result in creative tools to increase innovation in different organizational systems in the health area.<sup>7</sup> Additionally, research is needed on how the team and managers could cooperate in the development of this entire innovation process.<sup>4</sup>

It is also interesting to point out that spontaneous post-event communication via e-mail with the first author revealed a growing interest in receiving guidance and recommendation on how DT would be used in current issues related to the preparation of undergraduate students for their internship.

## KNOWLEDGE TRANSFER PLANNING

Given the positive experience with a diverse and relevant audience, the last phase of the postdoctoral fellowship focused on creating an unprecedented optional discipline plan for a multidisciplinary target population.

Prospectively, the DT method and the new knowledge generated once incorporated into the practice of nursing and

other professions would promote dialogue with other researchers. It is argued that, in this way, Brazilian nurses could refine their active listening skills, without judgment, but with an open mind to creativity; they could develop the ability to think in a non-linear way and do so scientifically.

In the conception of this new course, it is considered that the objective of a DT approach is to define and develop comprehensive and effective solutions to problems through creative thinking, satisfying three key factors: viability, factuality and desirability.<sup>7</sup> By thinking in a multidisciplinary perspective, students could learn that viability is related to the underlying organizational structure and business model. Factuality refers to internal skills, the technological potential for change, and the ability to provide an innovative idea; students would seek new ways of thinking. Desirability concerns how stakeholders and, in particular, end users are emotionally connected to an innovation.<sup>4</sup> Students would experience the innovation as an experience of empathetic appreciation of the particularities, needs, and potential of the clientele.

Authors suggest that, in addition to the skills developed through DT method, it can be used to redesign curricula and shape organizational processes.<sup>9</sup> Nursing care can result in new ways of dealing with human diversity and in the ability of individuals and communities to respond in different ways of operating health care.<sup>10</sup>

It is recommended that courses should be created to redesign the scientific thinking action for the field of nursing and health. Based on the intellectual experience lived by the first author with other students thinking about their own professional perspectives, there is great acceptance and motivation for the intellectual partnership with nursing professionals. There is a growing consensus that nursing has unique knowledge regarding health, life, and death experiences of individuals.<sup>11</sup> Therefore, other professionals perceive nursing as a catalyst for technical solutions for complex situations in health systems.

## FINAL CONSIDERATIONS AND IMPLICATIONS FOR PRACTICE

The opportunity of a postdoctoral fellowship abroad is an enriching experience because, in addition to stimulating the internationalization of research between universities and the exchange of knowledge between researchers, it can promote a better understanding of the way of thinking of those involved.

Participating in several Canadian nursing events fostered new knowledge, especially in the area of innovation based on scientific evidence and the approximation and incorporation of the concept of DT. The first phase of the post-doctoral fellowship allowed the fellow to acquire knowledge further than nursing, stimulating critical thinking beyond the field of health. Attending the DT course resulted in a concrete

development of the ability to listen more critically, with more attention and less judgment, and the affirmation of nursing knowledge and respectability in a context of multidisciplinary exchange of ideas.

Consequently, when it comes to teaching DT for nursing, it is undeniable that this method could revolutionize the education of a new generation of researchers, educators, managers, and healthcare professionals. The social commitment with the Brazilian nursing in the digital age, acting in constantly complex realities, will be strengthened by the fearless ability to think and innovate in the production of knowledge. Currently, DT is a cognitive tool that reconstructs human ingenuity inspired by humane, empathetic values that ensure the quality of services and products and confirm respect for customer's profile. Therefore, any idea that emerges to solve problems will always be welcomed, and may give new meaning to scientific thinking and acting for the future of Brazilian nursing.

## AUTHORS' CONTRIBUTION

Conception of the design of the experience report, acquisition of information, analysis and interpretation of information. Critical writing and approval of the final version of the content to be published. Agreement to be responsible for all aspects of the published article. Eny Dórea Paiva. Margareth Santos Zanchetta.

Interpretation of information. Critical writing and approval of the final version of the content to be published. Agreement to be responsible for all aspects of the published article. Camila Londoño.

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