

Design thinking: innovation in nursing teaching training

Design thinking: inovação na formação docente em enfermagem

Design thinking: innovación en formación de profesores de enfermería

ABSTRACT

Objectives: to describe a pedagogical workshop based on Design Thinking in the context of nursing teaching education. **Method:** experience report on a pedagogical workshop that used Design Thinking as an active methodology. Fifteen graduate, master and doctoral students from a public Brazilian higher education institution participated. The Design Thinking stages of discovery, interpretation, ideation and prototyping were organized into three stages and seven activities. **Results:** for the application of Design Thinking, a strategic challenge was proposed, which allowed participants to develop interaction, collaboration and empathy. The solution to the challenge resulted in three prototypes. The workshop was positively evaluated and the professors in training identified Design Thinking as an active methodology that can be applied in the context of undergraduate nursing. **Conclusion:** creative and disruptive ideas were created by nursing professors in training using Design Thinking as an active methodology.

Descriptors: Innovation; Teaching; Nursing Teaching Practice; Higher Education; Nursing.

RESUMO

Objetivos: descrever uma oficina pedagógica fundamentada no *Design Thinking* no contexto da formação docente em enfermagem. **Método:** relato de experiência sobre uma oficina pedagógica que utilizou o *Design Thinking* como metodologia ativa. Participaram 15 pós-graduandos, mestrandos e doutorandos, de uma instituição pública de ensino superior brasileira. As fases do *Design Thinking* descoberta, interpretação, ideação e prototipação, foram organizadas em três etapas e sete atividades. **Resultados:** para a aplicação do *Design Thinking* foi proposto um desafio estratégico o que possibilitou aos participantes desenvolver a interação, colaboração e a empatia. A solução ao desafio resultou em três protótipos. A oficina foi avaliada de forma positiva, e os docentes em formação identificaram o *Design Thinking* como uma metodologia ativa passível de ser aplicada no contexto da graduação em enfermagem. **Conclusão:** Ideias criativas e disruptivas foram criadas por docentes de enfermagem em formação a partir do uso do *Design Thinking* como metodologia ativa.

Descritores: Inovação; Ensino; Prática do Docente de Enfermagem; Educação Superior; Enfermagem.

RESUMEN

Objetivos: describir un taller pedagógico basado en Design Thinking en el contexto de la formación de profesores de enfermería. **Método:** Informe de experiencia de un taller pedagógico que utilizó Design Thinking como metodología activa. Participaron quince estudiantes de posgrado, maestría y doctorado de una institución pública de educación superior brasileña. Las etapas de descubrimiento, interpretación, ideação y prototipado del Design Thinking se organizaron en tres etapas y siete actividades. **Resultados:** para la aplicación del Design Thinking se planteó un desafío estratégico, que permitió a los participantes desarrollar interacción, colaboración y empatía. La solución al desafío resultó en tres prototipos. El taller fue evaluado positivamente, y los docentes en formación identificaron el Design Thinking como una metodología activa que puede ser aplicada en el contexto de la graduación en enfermería. **Conclusión:** las ideas creativas y disruptivas fueron creadas por profesores de enfermería en formación utilizando Design Thinking como metodología activa.

Descritores: Innovación; Enseñanza; Práctica del Docente de Enfermería; Educación Superior; Enfermería.

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INTRODUCTION

Working in higher education requires specific knowledge and skills from professors, especially when it comes to training professionals in health. At the same time, there is a lack of space for pedagogically training the teaching practice of nursing. Thus, graduate schools become suitable places to prepare professors for undergraduate courses ⁽¹⁾.

In this context, during the training process, the pedagogical themes must approach assumptions that dialogue with current educational paradigms. The National Health Council recommends the use of active teaching methodologies aiming to train critical and reflective professionals; reinforcing the role of the professor as a facilitator/mediator of knowledge through strategies that favor the student's protagonism ⁽²⁾.

Active methodologies value the student's involvement and stimulation to search for knowledge during the teaching-learning process ⁽³⁾. There are several pedagogical strategies conceived from the concept of active methodology, one of those is Design Thinking, an approach to innovation focused on empathy, collaborative work, and the prototyping of creative and innovative ideas.

The literature presents this approach as a mental model in which a working group (the so-called designer thinkers) is involved in solving a challenge and designing solutions from thought oscillation within specific phases named discovery, interpretation, ideation, experimentation, and evolution ⁽⁴⁾. Each phase has a set of proper strategies that enable the production of innovative ideas ⁽⁵⁾.

In the national scenario of higher education in health, a study pointed to the possibility of using Design Thinking in undergraduate and graduate courses (6). Nevertheless, no productions deal with this approach as an active methodology in nursing education. Therefore, we highlight the innovative character of experiences that approach the use of Design Thinking in that area. From this perspective,

the objective is to describe the course and results of a pedagogical workshop based on Design Thinking in the context of teacher education in nursing.

METHODS

This paper is an experience report about a pedagogical workshop whose objective was to present Design Thinking as an innovative active methodology. The scenario was a Nursing Graduate School (PPGEnf) of a public university in the south of Brazil. The target audience consisted of students enrolled in disciplines that monitor and develop didactic-pedagogical skills for undergraduate courses. The mediator, a graduate of PPGEnf, prospected the location as favorable for collecting doctoral research data. Ethical aspects were under the current resolution (7), and there was permission from the Research Ethics Committee under the number 2,607,086, and all participants filled out the Free and Informed Consent Form.

The workshop happened on October 27, 2017, with morning and afternoon shifts that made up a total workload of eight hours. The participants were allowed to experience the Design Thinking phases and strategies to achieve its assumptions, resulting in a schedule structured into three stages and seven activities (Figure 1). The selected strategies for the execution of the phases were the strategic challenge presentation, prior knowledge organization, exploratory research, personas, and empathy map, refining the problem, brainstorming, choosing the best ideas and rapid prototyping (6). The classroom, the place for the activities, was organized for the reception, interaction, and collaboration between the participants. This way, the desks and chairs were arranged in four islands with consumables such as bond paper of different colors, adhesive tapes, colored cardboards, colored adhesive papers, pens, colored pencils, and brushes, among others provided for each island. An auxiliary table containing scrap materials and magazines, among others, was available to serve as a facilitator for the creative stimulation.

Figure 1 - Schedule of pedagogical workshop activities.

Stages	Activities	Strategies
First stage: reception and discovery	Activity 1 – reception, presenting of schedule, mediator, and participants	Dialogued exposition
	Activity 2 - using dynamics for exercising empathy and collaborative work	Dynamic 1: The exchange of a secret, Dynamic 2: The "marshmallow" challenge.
	Activity 3 - discovery phase	Presentation of the strategic challenge, organization of prior knowledge, exploratory research, personas, and empathy map.
Second stage: Interpretation and ideation	Activity 4 - Interpretation phase	Refining the problem
	Activity 5 – Ideation phase	Brainstorming and choosing the best ideas, how can we?
Third step: Workshop trial and evaluation	Activity 6 – Experimentation phase	Rapid prototyping
	Activity 7 – closure	Workshop assessment

Source: Prepared by the authors, 2019.

RESULTS AND DISCUSSION

There were 27 master's and doctoral students enrolled in their courses during the period of the workshop, and all were invited by e-mail, but only 15 nursing graduate students, eight master's

students and seven doctoral students, showed interest and availability for the training, all of those were nurses by formation.

First stage: reception and discovery

The first activity performed was the presentation of the participants and the mediator, following the explanation of the workshop purpose and reading the schedule. To anchor the reflections provided by the workshop to the theoretical references and scientific evidence, we carried out a brief dialogic exposition on the challenges of education in the 21st century, focusing on innovation in the higher education scenario and the use of technologies and active methodologies.

They carried out two dynamics to amplify the themes of empathy and collaborative work. The first, named "The exchange of a secret," consisted in distributing slips of paper for the participants to write a personal problem, which was randomly redistributed and read by the involved actors who were oriented to propose a solution or coping strategy for them. In a round of presentations, the problems and solutions were exposed and disclosed. Then, the real problem owners commented on whether the solution or strategy had been effective. In a debate, the mediator highlighted the dynamics' strengths and weaknesses and showed the importance of knowing each human being's needs, dreams, and desires before proposing a solution for someone else's problem.

To awaken the participants about the importance of collaborative work, a dynamic "The marshmallow challenge" was held, predicting five-member groups to build towers in 18 minutes using spaghetti sticks, duct tape, string and a marshmallow attached to the tower top⁽⁸⁾. None of the three groups formed could make the tower stand up at the end of the established time. The unfavorable result led to a debate about the roles of each actor in a workgroup and the importance of result pursuit and not only performing a task.

Now with the graduate students sensitized to the principles of Design Thinking, the third activity focusing on the phase of problem understanding was held, with the three formed groups were identified by the colors yellow, orange, and blue. The graduate students were then called designer thinkers with a list of strategies to be executed in the first phase: the strategic challenge, prior knowledge organization, exploratory research, personas, and empathy map.

In the workshop context, either the designer thinkers or the mediator could define the strategic challenge (6), the mediator proposed the how-to-assess-student-learning challenge. Thus, for the organization of previous knowledge, each designer thinker projected on colored slips of paper all the doubts, knowledge, and information they had on the topic of learning assessment. Additionally, they defined the people directly affected by the problem expressed in the strategic challenge. Each paper was fixed on cardboard, resulting in the production of three panels. The interested parties delimited by the yellow group were teachers, students, and technical-administrative employees; the orange

group, teachers; and the blue group, teachers, students, and society.

Regarding the exploratory research, the groups walked through spaces of academic coexistence and sought to talk informally with professors, students, and university employees. Their responses were recorded in material provided by the mediator and served as support for the personas and empathy map strategies.

Concerning the empathy map elaboration, the designer thinkers used free material available on the internet (9), guiding them to exercise empathy through the description of what people affected by the strategic challenge object hear, see, do, and feel. Articulated to this strategy, the personas - fictional characters - were created by receiving specific names and features.

The name attributed to the persona of the yellow group was Ariel, and her unconventional body structure was associated with her personal and professional characteristics. They visualized a mature female professor from a public university who would notice changes in the teaching, learning, and assessment processes, with self-criticism, reflection, and concern about assessment methods, strategies and reliability as the qualities of the character.

The persona Amudantina, a name derived from the Portuguese verb "mudar," to change in English, was depicted as a young professor engaged with change and innovation in the academic environment. In the projected image, the character's head resembled the planet Earth, connecting to her desire to transform the learning assessment process in her context.

Dona Eugenia, the persona created by the blue group, was the image of a hospitalized elderly woman who had her mouth covered by her own hands, meaning her impossibility to express opinions about the care offered to her.

The creativity expressed in elaborating the fictional characters with their proper peculiarities reinforces the potential of collaborative work and the empathy exercised by the participants. It shows how important it is to provide spaces for sharing experiences, encouraging interaction and creativity in the professor education process⁽¹⁰⁾.

Second stage: Interpretation and ideation

The second stage of the workshop was composed of two activities carried out simultaneously due to their complementarity. Thus, brainstorming and choosing the best ideas were carried out simultaneously, making it impossible to define the beginning and end of each one. At this stage, the working groups also produced panels containing the individual written ideas on colored paper, which were shared and debated. In the process, the mediator reiterated the importance of the three pillars of Design Thinking (being desirable, feasible, and practicable) to prospect a solution for a strategic challenge (6) (Figure 2).

Figure 2 - Synthesis of ideas for solving the strategic challenge.

Working groups	Desirable, viable and practicable ideas
Yellow group	<ul style="list-style-type: none"> - Define assessment criteria - Define assessment process - Use of technological resources
Orange group	<ul style="list-style-type: none"> - Procedural evaluation of learning - Deconstruction of traditional assessment - Academic appreciation - Focus on learning, not assessment
Blue group	<ul style="list-style-type: none"> - Patient-centered assessment - Color-based assessment criteria

Source: Prepared by the authors, 2019.

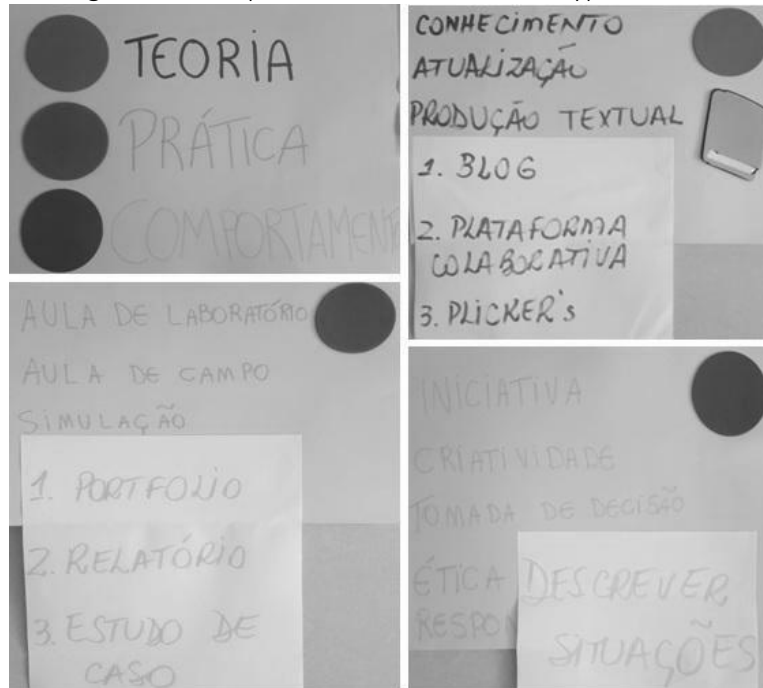
Third stage: Experimentation and evaluation of the workshop

Now, instrumented for the third and final stage, the rapid prototyping strategy consisted of elaborating material models from the listed ideas.

The yellow group created the Multiple Case Assessment (MCA) (Figure 3), a software to be hosted on the Modular Object-Oriented Dynamic Learning Environment (Moodle) platform. The MCA would create opportunities for the assessment from theoretical, practical, and behavioral perspectives, each with a set of strategies. In terms of theoretical

assessment, the academics would be evaluated through participation in a blog, textual production in a collaborative platform, and having their knowledge measured by an application to carry out tests for students; as for the practical dimension: portfolios, reports, and case studies would be annexed to the MCA; considering the development of initiative, creativity, decision-making, and ethics skills, the description of situations experienced in the academy would allow the assessment of student behavior.

Figure 3 - Multiple Case Assessment Prototype.



Source: Workshop data, 2017.

The solution developed by the orange group to the strategic challenge was named Learning "Trajection" (Figure 4). The word "trajection " was coined by associating the words "trajectory" and "evaluation." In the proposal, the evaluation would occur during a discipline. To this end, in the first contact, the academics, symbolized by a small doll, would be mobilized to expose their previous knowledge about subjects and themes to be

addressed, the appreciation of the academic's perspectives on the discipline was exemplified by the possible questions: Shall we talk about our difficulties? Shall we talk about our expectations and desires? Shall we practice? Care, sing, dance, problematize? A larger doll than the one at the beginning, accompanied by a mirror with the phrase 'Who am I?', was positioned at the end of the path, symbolizing the academic's development.

Figure 4 - Learning Trajection Prototype.



Source: Workshop data, 2017.

The assessment instrument (Figure 5), the name given to the blue group prototype, focused on the patient. The strategy would make it possible for the patient and his family to express their opinion about the care provided by nursing students. The parameters defined by the instrument were excellent (the service exceeded the patient/family

expectations), good (the service met the patient/family expectations), or poor (the service did not meet the family expectations). The teacher would then monitor the assessment, and the established concept would be an integral part of other strategies used (professor assessment and self-assessment).

Figure 5 - Assessment instrument Prototype.



Source: Workshop data, 2017.

Producing new ways of evaluating student learning reiterates the purpose of Design Thinking to foster creativity as a skill that enables adaptation to contemporary uncertainties, changes, and challenges. When provoked, creativity allows the teacher to adapt to the conditions of the current educational context, and, as evidenced by the prototypes produced by workshop participants, the learning assessment was contextualized according to the paradigms of 21st-century education (11).

Workshop assessment

The assessment proceeded through an instrument divided into three blocks, organized into open and closed questions. The first block consisted

of 20 questions, analyzed by the Likert Scale, ranging from totally disagree to totally agree; in the second, the participant described the workshop in one word; the last block was composed of two open questions.

The quantitative evaluation presented overall satisfactory results about the Design Thinking approach, especially in terms of creativity, teamwork and mediator support throughout the process. Only the item whether the time proposed for planning and executing the activities had been sufficient presented negative answers, corroborated by the responses given in the open questions.

Table 1 - Design Thinking workshop assessment, Curitiba, 2017.

Criteria	D ^I % (N)	NA/ND ^{II} % (N)	A ^{III} % (N)	TA ^{IV} % (N)
1. Creativity: the workshop stimulated and allowed you to use creativity.	-	-	6.66 (1)	93.3 (14)
2. Innovation: the workshop favored the creation of new ideas for proposing solutions to the strategic challenge.	-	-	20 (3)	80 (12)
3. Applicability: I consider the possibility of using Design Thinking in the educational context as an active methodology.	-	-	26.7 (4)	73.3 (11)
4. Ludicidade: senti prazer ao realizar as atividades da oficina.	-	-	20 (3)	80 (12)
5. Collaboration: the workshop stimulated collaborative work and favored the collective construction of knowledge.	-	-	13.4 (2)	86.6 (13)
6. Authorship: the workshop allowed the creation of authorial materials/content.	-	13.3 (2)	26.6 (4)	60 (9)
7. Autonomy: I had the freedom to make choices during the activities.	-	-	13.4 (2)	86.6 (13)
8. Teamwork: working as a team facilitated the execution of activities and enriched the construction of knowledge.	-	-	6.66 (1)	93.3 (14)
9. Languages: the use of images, texts, and objects helped the understanding of the strategic challenge and the execution of the DT phases.	-	-	26.7 (4)	73.3 (11)
10. Physical resources: the physical space (classroom) and permanent resources (chairs, tables, blackboard) were adequate to develop the activities.	-	-	40 (6)	60 (9)
11. Contemporaneity: the Design Thinking approach meets the most current educational paradigms.	-	6.66 (1)	6.66 (1)	86.6 (13)
12. Mediation: the mediator conducted the workshop from a dialogic and interactive perspective.	-	-	6.66 (1)	93.3 (14)
13. Participants' prior knowledge: the workshop valued it.	-	6.66 (1)	20 (3)	73.3 (11)
14. Environment: the group reception favored and facilitated socialization among workshop participants.	-	-	33.3 (5)	66.6 (10)
15. Time: the time allotted for the planning and execution of the proposed activities was sufficient.	6.66 (1)	20 (3)	46.6 (7)	26.6 (4)
16. Strategy: the Design Thinking approach is an important tool for the didactic-pedagogical training of health professionals.	-	-	33.3 (5)	66.6 (10)
17. Reflection: I had the opportunity to think critically and reflectively during the workshop.	-	-	26.7 (4)	73.3 (11)
18. Practicality: I feel encouraged to use and make my peers aware of the innovations and knowledge that I acquired in this workshop.	-	-	60 (9)	40 (6)
19. Feasibility: it is financially viable and sustainable to use Design Thinking in pedagogical practice.	-	13.3 (2)	40 (6)	46.6 (7)
20. Expectation: the workshop exceeded your expectations.	-	-	26.7 (4)	73.3 (11)

^ITotally disagree; ^{II}Do not agree / do not disagree; ^{III} Agree; ^{IV}Totally agree.

Source: Workshop data, 2017.

When describing the workshop using only one word, the ones that emerged were: invitation, scientific, challenging, reflection, construction, pleasurable, innovative, innovation, instigating, transformation, success, good, and interactive.

The last field in the evaluation instrument included the questions: How was your experience participating in the workshop and Suggestions for the next Design Thinking workshop. Regarding the first, an emphasis on the opportunity for learning and reflection, learning from practice, stimulation of creativity and collaborative work using active methodologies, the contribution of Design Thinking to the didactic-pedagogical training of nurses, and its applicability in different practical contexts, valuing the participants and encouraging creativity.

“Great learning and stimulus to reflection and encouraging change.”

“The theme of the evaluation was accurate because it bothers everyone. It makes us reflect and seek other possibilities.”

“Very productive. Despite knowing about active methodologies, I still have difficulty applying them in practical terms. The workshop stimulated further creativity and group discussion, which was also important for getting to know colleagues. Besides, it was possible to observe that the strategy kept everyone very attentive.”

“It was an incredible experience encouraging the use of that strategy in teaching practice. Design Thinking enables a creative approach to the use of active methodologies.”

“(…) brought the opportunity to explore a topic not addressed in graduate courses, despite being very current and relevant. We were encouraged to apply DT (Design Thinking) in our teaching practice to offer didactic training to undergraduates.”

“Excellent. It contributed a lot to the theory x practice relationship and the context in which I am inserted. Very valid. The theme is super interesting and innovative and may be used in different areas and contexts.”

“I felt valued for my prior knowledge and was able to share my skills and knowledge. Being creative during the activities was a challenge.”

The last question of the assessment tool aimed to collect information from the participants about the aspects that limited the development of the pedagogical workshop. Suggestions related to time, the adequacy of physical and technological resources, the use of examples applicable in teaching practice, and further explanation of the strategies applied at each stage predominated.

“Decrease the time.”

“I wish I had had a lot more time to create.”

“Audiovisual – equipment with greater power for video presentation and a different arrangement of tables since some were facing away from the speaker was ministering the activity.”

“Experiencing situations in nursing disciplines and/or simulating contents for applicability.”

“(…) maybe adding an example for each activity would make it clearer.”

The feedback from the workshop revealed that Design Thinking as an innovative active methodology provided opportunities for the mediator's action, even though the qualitative evaluation showed the absence of a pre-defined formula for mediation. The time and use of an audio-visual resource reiterate the importance of the mediator reflecting on the action during the act itself (12).

The workshop conduction and results showed that Design Thinking was an innovative methodology for the participants' professor training (masters and doctoral students), especially in terms of producing creative authorial solutions for the learning assessment (the strategic challenge objective), as well as for the positive evaluations in the questionnaire regarding its creativity, innovation, applicability, and practicality. ⁽¹¹⁾.

FINAL REMARKS

The workshop focused on the Design Thinking phases and strategies to introduce to the nursing professor in training an innovative and active methodology that enables effective collaborative work, the exercise of empathy, and the elaboration of creative and disruptive ideas.

Dealing with learning assessment in the strategic challenge phase provided an opportunity to discuss a topic that arouses interest and concern among professors and students. In this sense, Design Thinking mobilized the actors involved to reflect and propose changes in the face of evaluative practices traditionally used in undergraduate nursing.

An identified limitation was the lack of execution of the evolution phase. Thus, we recommend that Design thinking workshops be developed with extended schedules according to the need, time and availability of the participants.

Thus, the workshop achieved its objectives, with the professors in training identifying Design Thinking as an active methodology available for education scenarios. We hope that this experience report will inspire the professors to use this approach that has gained space in different professional scenarios.

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