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Methodological meta-approach to Design Thinking on a professional master's degree in design: experience report

Meta-abordagem metodológica do Design Thinking em mestrado profissional de design: relato de experiência

Méta-approche méthodologique du Design Thinking dans une master professionnel en design: rapport d'expérience

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Abstract

The discipline Topics in User-Centered Design, part of the Professional Master's Degree of the Postgraduate Program in Design (PPGD) of the Federal University of Amazonas (UFAM), has as its syllabus the application of innovative methodologies for the creation, concept, development and prototyping of products, considering the needs of users. Among these, this report focuses on the Design Thinking (DT) method, due to its relevance in graduate studies in the field—according to recent Brazilian studies. As an experiment, the course instructor provided instruction on the DT process, as well as the techniques and tools for implementing it, challenging the class to use it to explore a better understanding of their own dissertations, thus establishing a methodological meta-approach to DT. This theoretical-practical research is an exploratory, applied, and qualitative case study, whose objective is to describe the experience of applying DT to facilitate the teaching-learning process and the development of design projects. The example presented is the experience report of a student who applied the focus group technique with her classmates. The results demonstrate that the student transcended her understanding of her project, which allowed her to develop skills required for both research and the job market. Therefore, this article highlights how applying the DT methodology in a classroom practice, through real projects, can be constituted as a concrete pedagogical resource in the teaching-learning process and integrate theory and practice in promoting learning by doing.

Keywords: Design. Design Thinking. Methodological approach. Professional Master's Degree. User-Centered Design.

Resumo

A disciplina Tópicos em Design Centrado no Usuário, do Mestrado Profissional do Programa de Pós-Graduação em Design (PPGD) da Universidade Federal do Amazonas (UFAM), tem como ementa a aplicação de metodologias inovadoras para a criação, conceito, desenvolvimento e prototipagem de produtos, considerando as necessidades dos usuários. Dentre as existentes, o foco deste relato é no método Design Thinking (DT), devido a sua relevância em pós-graduação na área — segundo estudos brasileiros recentes. Como experimentação, então, a docente da disciplina instruiu sobre o processo do DT, bem como as técnicas e as ferramentas para executá-lo, desafiando a turma a utilizá-lo no intuito de explorar uma melhor compreensão sobre suas próprias dissertações, configurando assim uma meta-abordagem metodológica do DT. Esta pesquisa é teórico-prática e se trata de um estudo de caso exploratório, aplicado e qualitativo, cujo objetivo é descrever a experiência de aplicação do DT para uma facilitação do processo de ensino-aprendizagem e para o desenvolvimento de projetos em design. Apresenta-se como exemplo o relato de experiência de uma discente, que aplicou na prática com os colegas de turma a técnica grupo de foco. Os resultados comprovam que a aluna transcendeu na compreensão do seu projeto, o que permitiu o desenvolvimento de habilidades requeridas para a pesquisa e o mercado de trabalho. Portanto, o presente artigo destaca como aplicar a metodologia do DT na prática da sala de aula presencial, através de projetos reais, pode configurar um recurso pedagógico concreto no processo de ensino-aprendizagem e integrar teoria e prática na promoção do aprender fazendo.

Palavras-chave: *Abordagem metodológica. Design. Design Centrado no Usuário. Design Thinking. Mestrado Profissional.*

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Resumé

La discipline "Sujets en Design Centrée sur l'Utilisateur" (UCD), une composante du programme du Master Professionnel du Programme d'Études Supérieures en Design (PPGD) de l'Université Fédérale d'Amazonas (UFAM), a pour objectif l'application de méthodologies pour la création, la conceptualisation, le développement et le prototypage de produits, en tenant compte des besoins des utilisateurs. Ce rapport s'intéresse notamment à la méthode du Design Thinking (DT), en raison de sa pertinence dans les études supérieures dans ce domaine — prouvé par de récentes études brésiliennes. À titre expérimental, le professeur a présenté le processus de DT, ainsi que les techniques et outils pour sa mise en œuvre, incitant les étudiants à l'utiliser pour mieux comprendre leurs propres mémoires, établissant ainsi une méta-approche méthodologique du DT. Cette recherche théorique et pratique est une étude de cas exploratoire, appliquée et qualitative, dont l'objectif est de décrire l'expérience d'application du DT pour faciliter le processus d'enseignement-apprentissage et le développement de projets de design. L'exemple présenté ici est celui d'une étudiante qui a appliqué des techniques de groupe de discussion avec ses camarades de classe. Les résultats démontrent que l'étudiante a transcendé la compréhension de son projet, ce qui lui a permis de développer des compétences nécessaires à la recherche et au marché du travail. Cet article souligne donc comment l'application de la méthodologie DT à la pratique en classe, par le biais de projets réels, peut constituer une ressource pédagogique concrète dans le processus d'enseignement-apprentissage et intégrer théorie et pratique pour favoriser l'apprentissage par la pratique.

***Mots clé**: Approche méthodologique. Conception centrée sur l'utilisateur. Design. Design Thinking. Master professionnel.*

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1 Introduction

User-Centered Design (UCD) is an approach that places the needs, desires, and expectations of users, i.e. humans, at the center of the creative process. Its goal is to seek solutions—such as products, services, and/or systems—that serve users efficiently, effectively, and satisfactorily in design projects, while increasing the possibility of innovation in the market.

More recently, due to the multidisciplinary nature of UCD, there has been greater integration of designers in the process of developing user-oriented solutions. In it, the designer is responsible for designing in such a way that the user, based on their perceptions, obtains a specific experience when interacting with the product, service, and/or system. In order for design professionals to be able to elicit it, the process must be structured in such a way that it guides them in the best possible way throughout the project from the outset.

Given this context, the Professional Master's Degree in Design of the Graduate Program in Design (PPGD) at the Federal University of Amazonas (UFAM), whose objective is to train professionals who, based on research, find innovative solutions to design problems, includes the elective course Topics in User-Centered Design. The course syllabus[4] includes the "application of appropriate innovation methodologies for the creation, design, and development of new products [...] considering the experiences, needs, and expectations of users, customers, and consumers."

Among the methodologies taught in the course, there is a focus on Design Thinking (DT) because, although it is treated as a philosophy in its origin, it is "an innovative approach to collaborative and interdisciplinary integration that starts from real and technically executable needs that mobilizes learning by articulating theory and practice through the solution of societal problems" (Lopes & Lopes, 2024, p. 60). Thus, it proves to be a relevant methodological approach in the context of higher education, including graduate studies, as already attested by recent Brazilian studies (Alves &

[4] *Syllabi for the Graduate Program in Design (PPGD) at the Federal University of Amazonas* (UFAM). (2025). https://ppgd.ufam.edu.br/ementas.html

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Wangenheim, 2022; Farias & Mendonça, 2021; Grilo, Medeiros Júnior & van der Linden, 2022; Rangel & Motta, 2017).

With this in mind, the professor teaching the course, conducted in person over three weeks in June 2025, applied a meta-methodological approach to DT: she taught DT in lectures and, at the same time, challenged the class to use it to seek a better understanding of their own research projects – since an important strategy for engaging students with the practice is to study real and/or meaningful problems for them (Grilo, Medeiros Júnior & van der Linden, 2022; Santos & Souza, 2023).

With the support of UCD and DT methodology, students were able to define the most appropriate techniques and tools for their projects and put them into practice in the classroom, with the intention of replicating them not only in their research but also in the real job market. After all, in a professional master's program, especially in design, students must take on a dual role: that of researchers and product designers, as stated by Farias and Mendonça (2021).

This article presents, as an example, the experience report of one of the students in the course, who applied the focus group technique, defined during the study of the meta-approach, in practice with the class. This is because graduate students in the discipline make up an essential part of the target audience for his research, which has already made it possible to obtain preliminary data.

Therefore, this article aims to describe the experience of applying DT as a methodological meta-approach in the classroom, both to facilitate the teaching-learning process on this methodology and to contribute to the development of research in the context of the User-Centered Design Topics course of a professional master's degree in design.

Thus, we aim to highlight: **i)** the student's perception of the relevance of DT practice for a better understanding of her research project and **ii)** the potential of DT as a pedagogical resource for the teaching-learning process at the graduate level in design, especially in professional master's courses.

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2 Theoretical Framework

2.1 User-Centered Design (UCD)

By observing the design methodologies used in both academic and professional settings, one can see a focus on innovation and the human aspect. In this context, User-Centered Design (UCD) can be implemented to help designers create products that meet users' needs (Lowdermilk, 2013). The term *centered* is used because, in the project, all points of interaction with the product revolve around the user—its center.

According to Pagnan *et al.* (2019, p. 4), "UCD contributes to the understanding of the psychological, organizational, social, and ergonomic factors involved in projects." The factors mentioned, which are largely subjective, can be understood by using appropriate techniques and tools with users: empathy maps, questionnaires, personas, usability tests, service *blueprints*, co-creation *workshops*, generative sessions, usage scenarios, among others. It should be clarified that these examples do not cover all the options indicated in the literature, not least because they are not necessarily specific to the UCD, but rather to scientific research as a whole.

However, the intensity of user involvement in the project varies according to the medium used to approach UCD (Souza & Savi, 2015). Therefore, in relation to the academic environment, it is worth mentioning the statement by Pagnan *et al.* (2019, p. 5) that "teaching design undergoes changes in the face of economic and social changes", to which we can add the growing market demands for innovation, which have led to an evolution in these existing means—or methods—for understanding users in UCD.

2.2 *Design Thinking* (DT)

The design process is often described as *user-centered*, rather than *market-* or *technology*-centered, as it seeks to understand what people specifically need. The market and technology are not ignored, but people are prioritized in decision-making. This is because starting with humans increases the chances of developing an innovative idea and finding a receptive market (Brown, 2020).

This is interrelated with *Design Thinking* (DT), which is an approach that uses

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the way designers think about problems to create solutions. According to Vianna *et al.* (2012), this form of thinking is abductive—when one observes the universe of the problem to formulate hypotheses about it.

Thus, while linear thinking is based on sequences, DT is based on connections (Brown, 2020). Connections are tools that, when applied to projects, seek to integrate and systematize project practice. Hence, despite originally being considered a philosophy or mindset embedded in the creative process inherent to designers (Brown, 2020), Leifer, Lewrick, and Link (2019) understand that DT also fulfills a methodological role.

Thus, it can be inferred that DT is a form of methodological approach to user-centered design. Nevertheless, Farias and Mendonça (2021) state that there is no consensus in the literature on what constitutes the stages of DT. In this study, for ease of understanding, we adopted the three steps proposed by Vianna *et al.* (2012) to carry it out:

1. **Immersion:** Seeks initial understanding of the problem, reframing; allows the issue to be approached from new perspectives. At this stage, it is possible to conduct *desk* research (on websites, books, magazines, blogs, articles, *etc.*), which provides references on trends in the field studied both in Brazil and abroad; exploratory research; preliminary field research and preliminary qualitative research—which aims at an initial understanding of the problem—and in-depth research—which delves into the context of the problem.

2. **Ideation:** Seeks to generate innovative ideas through collaborative activities that stimulate creativity.

3. **Prototyping:** Seeks to make ideas tangible and validate the solution devised for the problem.

It is also important to note that between the **Immersion** and **Ideation** stages there is a sub-stage called **Analysis and Synthesis**. In this sub-stage, the data collected during the **Immersion** stage is evaluated and synthesized in order to facilitate the process of generating ideas in the Ideation stage.

As illustrated in **Figure 1**, the DT process is structured in a way that is not necessarily linear, since its stages are iterative, interactive, flexible, and adaptable (Farias & Mendonça, 2021). As such, it is reconfigured according to the problem at hand (Torres, Hilu & Kowalski, 2022).

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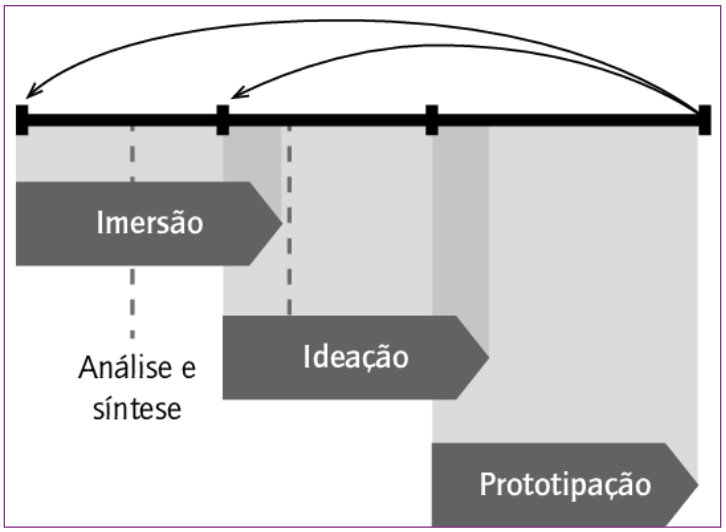
Figure 1 – Stages of the *design thinking* process[5]



Source: Vianna *et al.* (2012, p. 18).

At each stage of this iterative process, techniques and tools derived from UCD, such as those mentioned above, can be applied, provided they are the most appropriate for the research problem situation (Vianna *et al.*, 2012). Thus, with these practices in place from the outset of the project, it becomes possible to identify flaws and adjust them more quickly in order to create a solution that is closer to what the user needs. The statement by Costa and Barreto (2024, p. 11) stands out:

> In DT, the artifacts produced using the tools (mind maps and concept maps, panels, affinity diagrams, 2x2 matrices, *storytelling*, etc.) are fundamental during and after the approach, documenting the process: during, they serve as a basis for organizing and guiding the next steps; afterwards, they serve as a reflection to understand and review the practice (Costa & Barreto, 2024, p. 11).

Considering, then, that DT articulates theory and practice to promote learning by being a "process that allows for testing, reevaluation, improvement, and redesign as new ideas are conceived, tested, and evaluated" (Rosado & Dias, 2024, p. 6), and decentralized from designers, it is not surprising that several authors defend its potential to improve the educational system (Clemente, Tschimmel & Vieira, 2016).

In the meantime, DT methodology has been widely applied in companies, organizations, government agencies, and educational institutions (Lopes & Lopes, 2024). To conclude this research, the next section addresses the adoption of DT in higher education and, more specifically, in graduate studies.

[5] The figure could not be directly translated as its source is in Brazilian Portuguese.

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2.2.1 *Design Thinking* (DT) in graduate studies

According to Santos and Souza (2023, p. 1), "in recent years, active methodologies have been increasingly used in the teaching-learning process, with the main objective of promoting more meaningful and collaborative learning". This can be attributed to "learning by doing". And, in the search for innovation in this process, one of the methodologies that has proven most effective among those used by teachers is precisely *design thinking* (Machado, Guerdt & Fialho, 2019). Rangel and Motta (2017, p. 310) claim that:

> DT is an integrative discipline because, as it does not have its own object, it has the potential to connect other disciplines to solve complex problems. That's what makes it so powerful. This is undoubtedly a feature that allows DT to be used as a tool for learning in any field of knowledge (Rangel & Motta, 2017, p. 310).

Complementing the authors' thinking, the use of DT in education becomes even more appropriate at the postgraduate level, where students from different professional backgrounds come together in a single classroom.

In line with this reasoning, recent reports have been found on the application of DT as a teaching methodology for postgraduate studies in Brazil, notably the studies by Alves and Wangenheim (2022); Farias and Mendonça (2021); Grilo, Medeiros Júnior, and van der Linden (2022); and Rangel and Motta (2017), whose results were considered the most relevant to the context of this research.

The graduate areas covered in the studies were: computing, education, institutional process management, and information technology, two of which were professional master's degrees. None of them addressed teaching in the field of design, although its multidisciplinary nature allows these studies to be used as similar.

In three of the four studies mentioned (namely: Alves & Wangenheim, 2022; Grilo, Medeiros Júnior & van der Linden, 2022; Rangel & Motta, 2017), DT was actively used in teaching and learning in graduate courses with 14 to 33 students. The procedures involved: **i)** teaching the DT process by subject teachers and **ii)** using this process for the development of projects in the area of knowledge of the studies by students. In the study by Farias and Mendonça (2021), DT was used only for the development of a student's educational product design.

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Except for Alves and Wangenheim (2022), all other authors used the steps of the process proposed by Vianna *et al.* (2012) for the application of DT, which proved to be beneficial for active learning by students. In the case of an example of application in a professional master's degree, such as the one studied here, it is worth highlighting the reflection by Farias and Mendonça (2021, p. 4):

> These phases are also consistent with a methodological approach when it comes to product development in a professional master's degree program, in which one must understand the problem, as well as all parties involved, analyze and synthesize the data, propose a solution, and test or validate it (Farias & Mendonça, 2021, p. 4).

Thus, it is understood that the steps outlined by Vianna *et al.* (2012) can be successfully applied in this research, as demonstrated below.

The main findings of the studies were similar: the adoption of DT in classroom dynamics contributed to the development of creative skills (Alves & Wangenheim, 2022), in addition to promoting students' understanding of how to seek appropriate solutions to problems in their realities, even among professionals inexperienced in design (Grilo, Medeiros Júnior & van der Linden, 2022). In contrast, Rangel and Motta (2017) pointed out that, although the application was successful, students missed having the opportunity to relate DT to their own projects, rather than projects exclusive to the discipline.

Based on the study by Rangel and Motta (2017), which proved the possibility of using *design thinking* as a human-centered methodology and approach in graduate studies, the decision was made to bring it into a similar dynamic for the User-Centered Design Topics course in the first semester of 2025, as explained in the following section.

3 Methodological Procedures

This research is theoretical and practical in nature: it is an exploratory case study with an applied purpose and qualitative in nature, according to Gil's classification (2022). In view of this, the procedures for conducting the research were: **i)** bibliographic and documentary survey; **ii)** proposal of a methodological approach to *design thinking* in the User-Centered Design Topics course; **iii)** application of the methodological approach and data collection; **iv)** data analysis; and **v)** discussion.

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3.1 Phase i)

The first procedure involved selecting scientific articles, books, and documents on user-centered design, *design thinking*, and their use as a methodological approach in higher education, especially for graduate studies. Priority was given to publications in Portuguese no older than 10 years, published by well-established authors. In this process, both Google Scholar and My Library were used as search tools, based on the terms "user-centered design," "*design thinking*," "*design thinking* methodology," "methodological *design thinking*," "higher education," "graduate studies," "professional master's degree," among other similar terms.

With the selection and reading of sources, the first objective was to understand the research universe with the conceptualization of UCD and DT, the characterization of DT as a methodological approach, and the identification of some of the appropriate techniques and tools to execute it. Subsequently, he focused on analyzing studies in which DT was applied as a methodology in higher education at the postgraduate level, using these examples to develop an application strategy for this case study. Based on all of this, it was possible to construct the theoretical framework for the research.

3.2 Phase ii)

In the second procedure, based on the studies mentioned in the theoretical framework, a proposal was developed for a methodological meta-approach to DT, which consisted of providing an immersion in *design thinking* with: **a)** the presentation of concepts, methodological approach, techniques, and tools by the teacher during the course of the discipline's classes and **b)** the use of this same approach as a way to delve deeper into the students' research projects, with a focus on identifying which techniques and tools could be appropriate for their projects and which could be done in the classroom as a way of understanding in practice the procedures necessary for their application.

The DT methodology used in the proposal was that described by Vianna *et al.* (2012), consisting of the stages of immersion, analysis and synthesis, ideation, and prototyping. As indicated in the literature, there were no restrictions on the techniques and tools available, so that each student could choose those that were most appropriate

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for their research projects at each stage, provided that they could be carried out in the classroom.

3.3 Phase iii)

The third procedure dealt with the application of the proposal in the elective course **Topics in User-Centered Design** in the Professional Master's Degree in Design (PPGD) at the Federal University of Amazonas (UFAM), whose syllabus already includes teaching methodologies for creating solutions that take user needs into consideration. The course was offered in person in the first semester of 2025, with a workload of sixty hours, and was attended by nine students. It is worth clarifying that, although it is a Design course, once it is at graduate level, not all students have academic training in the field. As a result, most were unaware of DT. In addition, the students were still in the early stages of developing their research projects. These factors made it even more convenient to apply the proposal as a way to help them in this process.

The first phase of applying the meta-approach in the discipline consisted of theoretical-expository classes on DT by the teacher, with the support and engagement of the students, who clarified their doubts and were willing to participate in dynamics to reinforce the content **(Figure 2)**.

Figure 2 – Students participating in one of the classroom activities

Source: The authors (2025).

The second phase of applying the meta-approach in the discipline consisted of challenging students to use DT as a methodology to delve deeper into their research

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projects, with the collaboration of the teacher and each other, a characteristic that is unique to the approach (Lopes & Lopes, 2024).

Throughout the development of the meta-approach, data was collected to discuss the relevance of *design thinking* both as a method for understanding scientific research and as a pedagogical resource for improving teaching at the postgraduate level in a professional master's degree program. This data was collected through **a)** observation of classroom participation, **b)** audiovisual recording of the techniques and tools used by students, and **c)** students' experience reports.

3.4 Phase iv)

The fourth procedure consisted of analyzing the collected data, based on the results achieved by the students when practicing the techniques and tools and comparing the status of the students' research projects before and after applying the meta-approach, based on their self-reports.

For the purposes of discussion in this article, we selected the report of one of the students on the course. It should be noted that what sets this example apart is the fact that the student already had part of the target audience, essential to her research project, available in her own class: graduate students from the Federal University of Amazonas (UFAM). Engaging with users as a way of seeking solutions to the problem under study is one of the fundamental characteristics of DT (Silva & Castro Filho, 2023). Therefore, in the next section, the student presents her preliminary results.

3.5 Phase v)

The fifth procedure consisted of a discussion about the application of the DT methodological meta-approach, focusing on the student's experience report presented as an example, in order to obtain a measure of the impact that understanding DT had on graduate students. The objective of this DT experiment is to assess whether it can be replicated by other teachers as a pedagogical resource in design education at the postgraduate level, especially in professional master's programs, which should provide training for their students through design practice.

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4 Experience report

To illustrate the results of the practices of the nine students enrolled in the course, we selected the work of master's student Ana Clara, also the author of this article, whose process of preparation, execution, analysis, and conclusion regarding the practice is presented below.

Given that the approach should be focused on the topics of the students' master's projects, it was necessary to initially explore the proposal studied by the student: the proposal for improvements in institutional communication through the websites that make up the UFAM[6] website (pro-rectorate websites, undergraduate courses, graduate courses, *etc.*), based on Process Management guided by Design and Human-Computer Interaction (HCI) Ergonomics. With the lectures, he then began to see it again, now through the lens of the DT methodology.

Thus, following the guidance given in class, to help visualize the project as a whole, the student placed the theme of her project and the DT stages proposed by Vianna *et al.* (2012) on a green cardboard. Next, the teacher handed out cards containing some of the techniques and tools presented in class, among the dozens available in the literature for implementing this methodology (Rosado & Dias, 2024). After reading the cards, the students and the teacher reflected together on which ones could be used at each stage of the DT in the development of this project. As Brown (2020, p. 245) states, "*design thinking* begins with divergence, the deliberate attempt to expand the range of options rather than restrict them."

After reflection, the cards with the techniques and tools suggested for each stage of DT were arranged on the student's poster board, as can be seen in **Figure 3**.

[6] *Website of the Federal University of Amazonas (UFAM)*. (2025). ufam.edu.br

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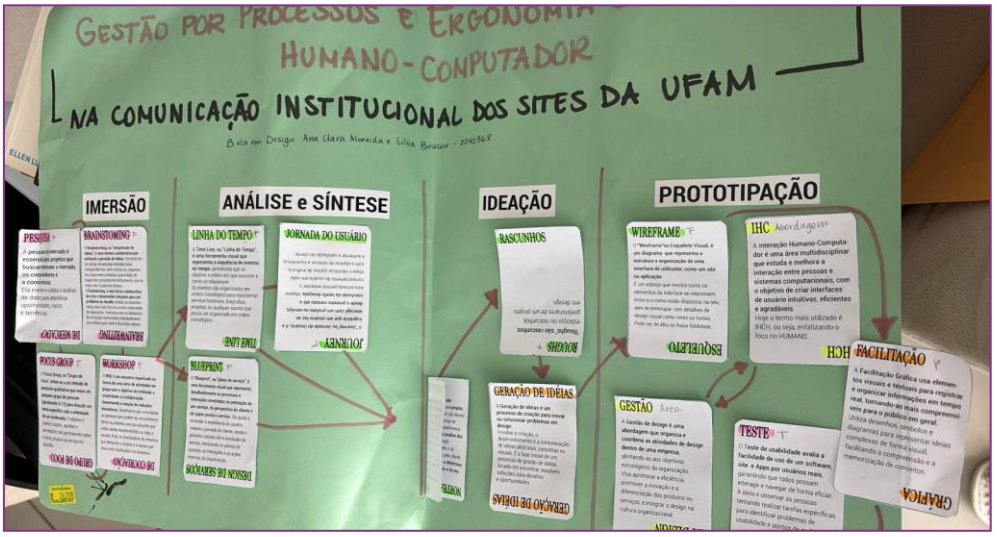
Figure 3 – Green card with DT methodology applied to the student's project



Source: The authors (2025).

The teacher then asked the student to select one of these suggestions to develop her procedures and apply them in the classroom as a way to practice DT. Como o projeto ainda se encontrava no estágio inicial, o foco se voltou para as ferramentas sugeridas para a primeira etapa da abordagem (imersão): pesquisa de mercado, *brainstorming*, *workshop* de cocriação e grupo de foco.

With the remaining paper cards still in hand, the student decided to create a journey map to help her with this selection process. According to Gibbons (2018), this tool is used to visualize the process that a user goes through to achieve a certain goal, highlighting their actions over a period of time in order to reveal opportunities to improve the user experience. The student then drew a manual diagram of her journey from the start of the master's program to the course, emphasizing the changes that occurred in her project proposal over this period of time. The result of the Student Journey Map can be seen in **Figure 4**.

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Figure 4 – Student Journey Map

Source: The authors (2025).

At the end of the journey, it was clear that the student had already mapped out the *stakeholders* of the main websites of the university being studied. Thus, at the time of the course, the project was in the data collection stage with each of the stakeholders—teachers, educational administrative technicians (TAEs), graduates, undergraduate and graduate students, *etc.*

This provided an opportunity for the student to obtain some of the data needed for her research by applying a data collection technique with the class, since graduate students are part of the project's target audience. Since she was working with a significant number of participants (the other eight students in the course), the student opted to use a focus group among the tools suggested for immersion.

The preparation and implementation of the focus group in the classroom, as well as its results, are described in the following section.

4.1 Focus group application

A focus group is a qualitative data collection technique whose purpose is to extract participants' opinions on a subject of study from their responses. According to Preece, Rogers, and Sharp (2013), focus groups are best suited for identifying problems faced by a community.

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The sessions consist of eight to twelve participants and are led by a moderator equipped with a semi-structured script of topics for discussion (Santa Rosa & Moraes, 2012). Each session consists of a representative sample of the project's target users. In the case of university website projects, it is recommended that separate sessions be held for each target user profile, as each one uses the website for different purposes (Preece, Rogers & Sharp, 2013).

In the process of preparing the student for the focus group, she received support from both her course instructor and her advisor. The first step in setting up the focus group was to create a preliminary questionnaire for participants. The questionnaire was made available via the *Google Forms* online platform one day before the session. The objective was to characterize the participants and understand their experiences with communication through the institutional website of the graduate program to which they belong[7], in order to prepare a script based on their responses to facilitate a more productive discussion.

All participants responded to the questionnaire, so the main data obtained from the 8 responses are summarized in **Figure 5** below.

[7] *Institutional website of the Graduate Program in Design (PPGD) at the Federal University of Amazonas (UFAM)*. (2025). ppgd.ufam.edu.br

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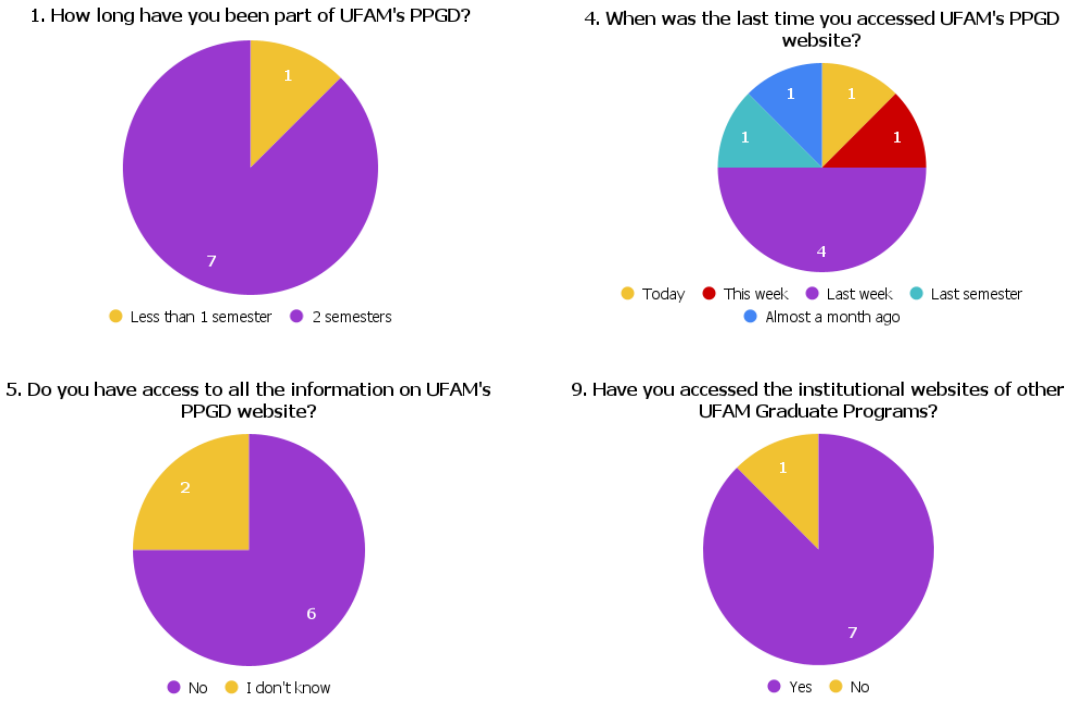
Figure 5 – Main results of the questionnaire prior to the focus group



Source: The authors (2025).

The student noted that most participants have been in the program for at least two semesters, so she assumed that this group already has a lot of experience with the course and its communication channels. Furthermore, four of the eight participants had last accessed the PPGD website during the week prior to the focus group, so they had a good memory of its structure. These two considerations indicated that the participants had the ability to contribute to the discussion in depth.

Another contribution of the questionnaire was the confirmation that none of the participants had access to all the information they needed on the website, which led to the inclusion of a question about what that information would be. Seven of the participants also responded that they had already accessed websites of other UFAM graduate programs, making it possible to draw comparisons with the object of the study.

It is worth noting that the questionnaire was also used to request respondents' consent to participate in the focus group, to which all 8 responses were positive.

Based on this, the student was able to accurately develop a semi-structured script to meet the focus group's objective: to identify the key information that PPGD graduate students need to be communicated on the program's website.

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In the meantime, the student highlights a need that arose during the script planning process: to understand, at a preliminary stage, how students would structure this information on the website. To this end, the student included a dynamic within the focus group for grouping the information that was mentioned during the discussion, considering the current structure of the website. The activity consists of providing a set of cards with information to the group representing a target user profile, which must organize them into groups according to similarities between the information, based on their judgment.

Thus, the session was divided into two parts: **i)** discussion about the communication of the PPGD website and the websites of other programs, and **ii)** grouping of cards containing the information necessary for the website according to the participants.

On the day of the focus group, before the session, the student presented her research topic in a *slide show* and explained the purpose of applying the technique to clarify any questions the participants might have. The session, consisting of two parts, lasted approximately one hour and took place in person in the classroom on June 12, 2025.

First, there was a discussion based on the script with the participation of the other eight students in the class as target users, the student researcher as moderator, and the teacher as assistant for data recording **(Figure 6)**.

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Figure 6 – Records from the first moment of the focus group

Source: The authors (2025).

During the discussion, the moderator wrote down on index cards the information that should be communicated on the PPGD website as the participants pointed it out. In the end, approximately 50 cards were filled out with different information, and others were left blank for the grouping activity.

So, in the second stage, the student handed out the cards to the participants and then asked them to: **1)** define how to group this information within the website structure and **2)** assign a name to each of the groups.

With the cards in hand, participants took about 30 minutes to group and name them, and also filled in some of the blank cards with additional information they deemed relevant to the website—such as Special Student, CAPES Course, and Proficiency Exam (**Figure 7**).

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Figure 7 – Records from the second moment of the focus group

Source: The authors (2025).

After that, the data obtained were analyzed using the thematic analysis method, chosen by the master's student together with her advisor, as it is recommended in qualitative research to identify patterns in data sets obtained from focus groups, for example, which involve a great deal of subjectivity (Dias & Mishima, 2023). Based on this, the results of the two focus group sessions are presented.

4.1.1 Results of the first stage of the focus group

The first moment primarily addressed the program's communication with its students through the website.

a) How was your first experience with the PPGD website?

Most students reported accessing the website for the first time during the application process to search for basic information (such as the announcement, program regulations, course subjects, *etc.*) and having great difficulty finding it because it simply was not available on the website. Even so, students reported that the website itself "*was not difficult to understand*" because the terms used are "*easy to assimilate*"—referring to the labeling system—but that it did not meet their informational needs.

This difficulty was especially felt by participants who had never studied at university, as they had no one to turn to other than the program's website to obtain this information. It is important to note that the impact of this first contact was so negative for

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one of the master's students that she never accessed the site again. The student reported that she now seeks out other people who are part of the program to find out what she needs, as she considers the website's communication to be very limited.

Participant B commented that although she initially had no problems with the website's communication, she can no longer use it because some information disappears from the website quite frequently, something that was also mentioned by the others.

b) How has your current experience with the PPGD website been?

All participants stated that the experience remains largely negative, as they still do not have access to certain information. The only noticeable change was that the website's news *banners* are now being used to communicate essential information more assertively, such as the results of the selection process stages for admission to the program.

c) What information is not available on the website that you need?

The participants' responses were similar and mentioned more than once – current internal regulations, organizational chart, contact channels, course structure, course syllabus, lines of research, subjects (workload, credits, teachers, class dates), academic calendar, application form, pre-project template, presentation template, advisors, room map, scholarship report, *etc.* It should be noted that participants unanimously characterized this information as the most basic, or essential, to have on the website.

One of the most relevant findings for the student researcher was that the lack of information in the application process almost caused one of the students to give up on entering the program, which may have actually happened to other people. Participant C stated that *"this lack of information leaves a bad impression of the university."* Institutional communication can therefore affect the enrollment of new students and result in lost opportunities for the university.

d) How was your experience with the websites of other UFAM graduate programs?

Regarding this, participant B commented: *"The other two websites I visited were just as confusing as the PPGD website. I couldn't find everything I wanted in them"*,

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while participant F added:

> *"Overall, the feeling on UFAM websites, and one that has already permeated mainly among those who have studied here, is: you already know it's difficult, that you won't be able to find what you need, so whatever you find is already great. When I accessed the graduate program website, it was no surprise, so it's not even such a frustrating experience anymore"* (Participant F, 2025).

Participants therefore appeared to be resigned to the lack of communication on the university's websites as a whole. Overall, participants concluded that everything discussed was the minimum required for the website to communicate more effectively with them.

e) The information architecture of the PPGD website

The students also commented on the site's information architecture: the hierarchy of information is unclear and much of it seems "loose". In the final moments of the session, participants began to offer suggestions for this—such as restructuring the website to prioritize information for each user profile (students, prospective students, *etc.*), which were used to kick off the second part of the focus group.

4.1.2 Results of the second stage of the focus group

The second stage consisted of grouping the cards. As it was carried out collaboratively, the results presented represent the consensus among participants on the most appropriate way to structure the organization of information on the website from their perspective as graduate students themselves.

As participants felt the need to fill out more cards than the fifty provided, the total ended up being 65. To classify them, participants created eight groups and then named them as requested by the student researcher, as follows: **1)** BEGINNING, **2)** PPGD, **3)** I AM PPGD, **4)** I WANT TO JOIN THE PPGD, **5)** WAYS TO ENROLL, **6)** PRODUCTIONS, **7)** MODELS AND DOCUMENTS, and **8)** LOCATION, in that order.

When presenting the groupings, the participants clarified that they had only considered the hierarchy of the groups, using the structure of the website's menu area as a reference (**Figure 8**), but that they had not defined a hierarchy or labels for the information within each of the groups.

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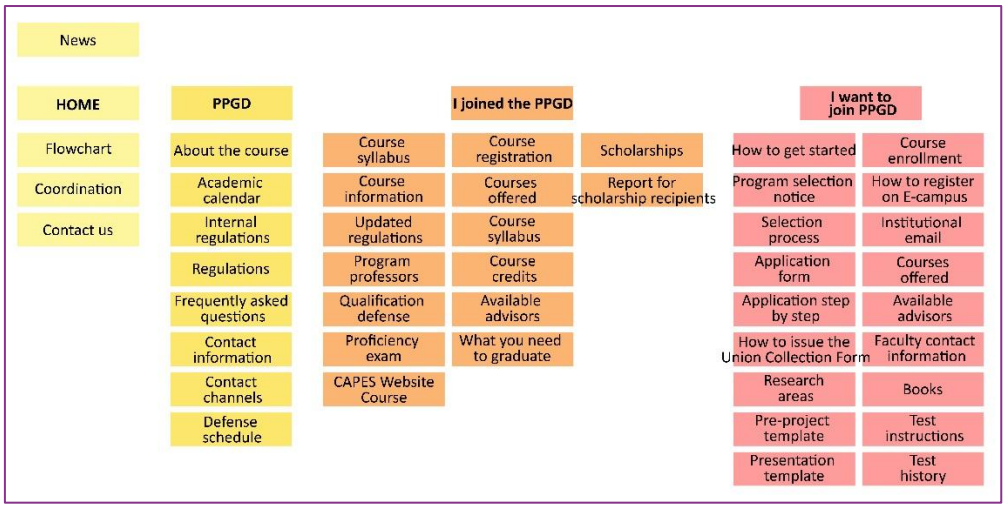
Figure 8 – Structure of the PPGD website

Source: The authors (2025).

Figure 9 below shows the first four groups formed by them, explaining the order in which they should appear on the website.

Figure 9 – First part of the groupings[8]



Source: The authors (2025).

Something that was made clear by the participants was that the “News” information does not belong to any category and should remain separate in the news

[8] The labels are a direct translation from the labels created in Brazilian Portuguese.

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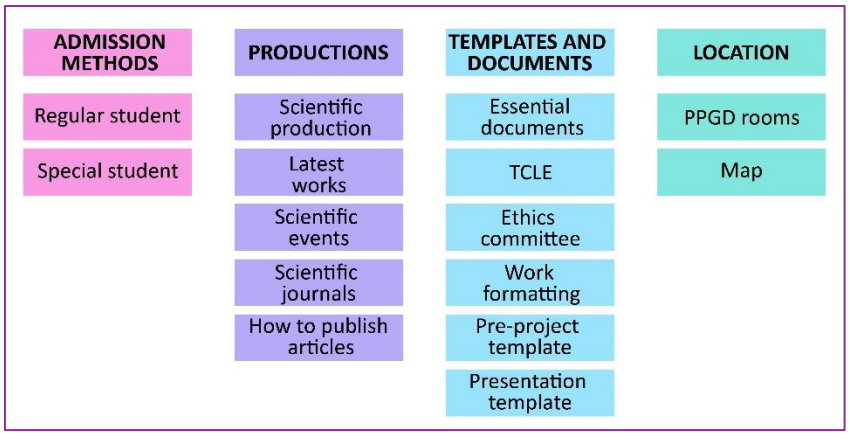
area, as this ensures good visibility for everyone. The first two groups are similar, as they contain information relevant to any user, but the “HOME” group contains more general information, while the “PPGD” group provides more specific information about the program.

The groups “I JOINED PPGD” and “I WANT JOIN PPGD” were suggested by the focus group and demonstrate a natural inclination among students to organize the site according to user profile. This is a form of subjective organization recommended in the literature for cases in which the website has two or more well-defined target users (Rosenfeld, Morville & Arango, 2015), as is the case with the object of study. In this organizational mode, users can more easily access information that is relevant to them but still have the freedom to access other information.

Figure 10 shows the other four groups formed, also following the order suggested by the participants.

Figure 10 – Second part of the groupings



Source: The authors (2025).

The “ADMISSION METHODS” group highlights two pieces of information added by participants who had previous experience as special students in the program and found it difficult to enroll in this modality. Regarding the groups “PRODUCTIONS,” “MODELS AND DOCUMENTS,” and “LOCATION,” participants commented that they contain information that any user may need, including program teachers, which is why they are separated.

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5 Further remarks

In the context of this research, it is appropriate to address the reflections obtained from the experiment presented from the student's perspective.

From her point of view, the second part of the meta-approach dynamic, which began with the construction of the green poster board, proved to be fundamental for an efficient understanding of the DT theory presented to the class in the first part. The student points out that displaying the stages on poster board facilitated understanding of her research problem by providing a 'macro' view, in addition to enabling productive collaboration among her classmates, who would not have had this opportunity in a 'traditional' classroom setting. As pointed out by Lopes and Lopes (2024, p. 63): "adopting *design thinking* in the classroom involves a break with previous practices, offering new possibilities for learning and teaching".

It also became clear that the "designer's way of thinking" was essential in realizing, when preparing to use the focus group technique, the need to use another data collection technique to supplement the information for his project.

According to the student, the opinions obtained through the focus group confirmed some of her previous assumptions about the problem of (lack of) communication on the PPGD institutional website, justifying, at this point, the need for her research.

Regarding the first moment, she was still able to conclude from this experience that it is necessary to develop more concise scripts for each session, as she noticed that after a while the discussion became repetitive. With this lesson learned, conducting subsequent focus groups may be more objective.

As for the second stage, it should be noted that its application has already made it possible to gain an understanding of how information is structured on the website according to this specific target audience, although it will be necessary to collect this data more assertively with other user profiles at a later date. In order to carry out this activity more often, it was necessary to: **i)** filter the cards to prevent participants from working with information that was very similar or even identical to each other, and **ii)** ask

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participants to suggest labels for each piece of information.

Finally, this experience gave the student the opportunity to work directly with part of her target audience, which could have been a difficult process on another occasion. At the same time, the student realized that she needed to narrow down her project proposal, given the volume of data already obtained preliminarily.

These findings therefore demonstrate the importance of the DT methodological meta-approach in the classroom. Thus, we can corroborate with Rangel and Motta (2017), who comment that each experiment carried out becomes an important source of learning.

6 Conclusion

The pedagogical strategies to promote active learning among students in the User-Centered Design Topics course proved to be effective in building theoretical and practical knowledge, preparing them for both research and the job market.

In the case of the student, the data verification carried out with her classmates in the classroom under the supervision of the teacher was very useful for the development of her project, as from that moment on, concrete data was obtained to explore further with other tools, as well as gaining more confidence and assertiveness in the answers for her project. Additionally, one may well note that the PPGD website has serious inconsistencies in its communication with users and needs to be improved. Based on the preliminary data obtained in this course, the student is already able to suggest important changes to the PPGD website and even to other graduate programs at the university, which can help her community by adapting the structure, hierarchy, and organization of the types of information needed to meet the expectations of its target users.

The focus group conducted by the student with her target audience as a design tool of the *design thinking* methodology described in this article, contemplating the construction of “learning by doing,” is a reality of the innovative classroom that places the student at the center of teaching and relies on exploratory teaching that encourages students to build their own knowledge through exploration and discovery, rather than receiving ready-made information from the teacher.

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It should be noted, however, that although the other students did not apply the techniques to their actual target audiences, the experiment was still successful because they understood its *modus operandi* and acquired the skills necessary to replicate them when collecting data for their research later on. Although most students come from multidisciplinary fields related to design (e.g., architects, journalists, and advertisers), it became clear that using DT as a methodological approach in the classroom for developing design projects can be an effective pedagogical resource for teaching in a setting as diverse as a professional master's degree program in design.

However, as this was a case study with a limited sample of students, the results presented here cannot be generalized, as this is only the beginning of an experiment. For future studies, we suggest replicating this methodological meta-approach of DT in other semesters in which the course is offered by the program, in order to expand the scope of the research. Furthermore, it is believed that the procedures reported in this study may encourage other teachers to adopt “learning by doing” in professional master’s degree courses in design, as well as encourage other students to use DT as a way to boost the development of their research.

In view of this, it is understood that the experience report contributes to teaching at the postgraduate level in design, considering mainly the particularities of professional master's degrees[9].

[9] Translation by Raquel Rossini Martins Cardoso. Bachelor's degree in Linguistics (2011) from the Federal University of Minas Gerais (UFMG) and graduate degree in translation and interpretation (2023) from the Pontifical Catholic University of Paraná (PUC-PR). Email: raquel@raquelrossini.com.

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Supplemental material

The supplementary material related to this article is available online.

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